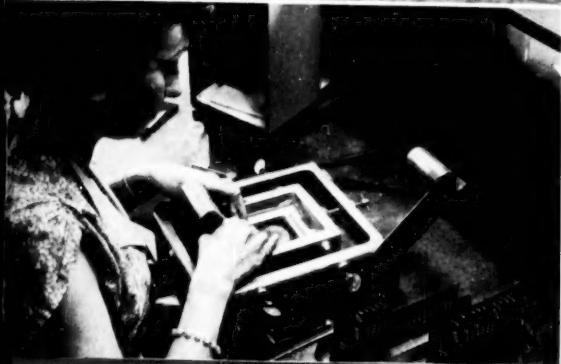
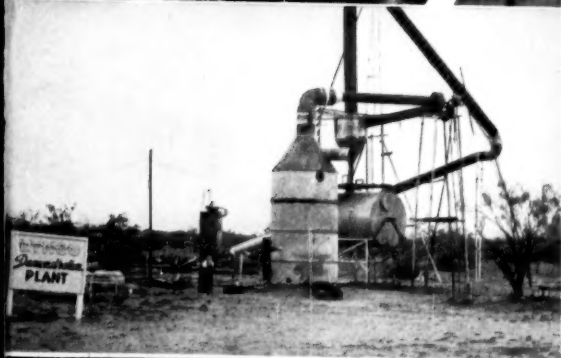


# Chemical Week

August 14, 1954

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Dealing with Washington is easy if you know the key men; here's who's who . . . . . p. 12

► U. K.'s Edwards, Italy's Lama: their socialization drive poses threat to U. S. trade . . . . . p. 28

► Novel, controversial carbon black process gets set for commercial debut . . . . . p. 40

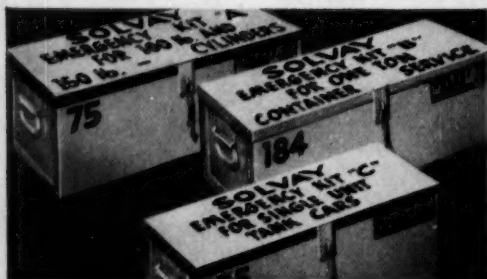
Aqua or anhydrous? Battle lines are shaping up for ammonia market skirmish . . . . . p. 52

► New look in phosphors: isotopes inch up on radium as excitors in luminous paints . . . . . p. 60

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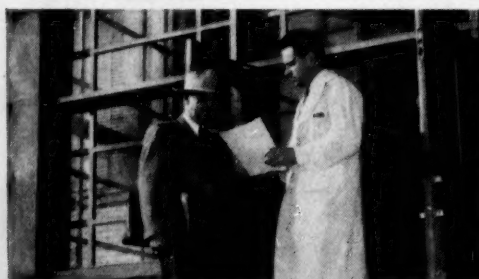


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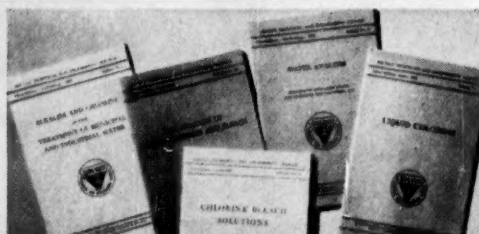
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our latest revised booklet  
explaining testing methods  
and comparisons, pages 30-31-32



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# Chemical Week—

Volume 75

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August 14, 1954 • Chemical Week

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## OPINION. . . .

### Petrochem Roundup

TO THE EDITOR: In the CW Report on Petrochemicals by Herman K. Nieuwenhuis (July 31), the author says that "Plans for Carbide's Torrance, Calif., plant . . . are believed to have been temporarily shelved."

Actually, construction of this plant is proceeding as planned and good progress has been made. Construction has been completed on all service buildings. All major equipment has been purchased and contracts for construction of foundations, underground piping and process buildings have been awarded . . . It is expected that the plant will be in full operation by the end of 1955.

Our investment will be upwards of \$36 million and initially the unit will turn out 60 million lbs. of polyethylene a year, ethylene oxide, ethylene glycol and ethylene glycol antifreeze . . .

H. B. McCURE  
President

Carbide and Carbon Chemicals Co.  
New York

*We sincerely regret publication of the misstatement regarding Carbide's Torrance project.*—Ed.

TO THE EDITOR: . . . I enjoyed reading Herman Nieuwenhuis' article on petrochemicals. This is a job that certainly needed doing and I have never before read a comparable survey of the status of the petrochemical industry.

The author did a wonderful job and I am sure that there are many others like me who are very appreciative of the time and effort that went into it . . .

C. H. WATSON  
Atlantic Gelatin Div.  
General Foods Corp.  
Woburn, Mass.

TO THE EDITOR: Whenever I read a very comprehensive article in any magazine, I wonder how a fellow can know so much about one subject, but I want to congratulate Author Nieuwenhuis on his Report on Petrochemicals . . .

HARRY R. LEWIS  
President  
Commerce Chemical Corp.  
Warren, Pa.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to:  
W. A. Jordan, Chemical Week, 330  
W. 42nd St., New York 36, N. Y.

## Offshore Citric

TO THE EDITOR: Your news article "Citric Zooms with the Peak" (June 26) was excellent and complete, except that it neglected to mention an old hand at citric acid production.

We started the manufacture of citric in Honolulu in 1931 from pineapple sources, and have since regularly marketed it under the "Dole" brand through McKesson and Robbins.

We precipitate the citric from natural pineapple juice by the calcium citrate process . . .

R. R. ROHLFING

Vice-president

Hawaiian Pineapple Co. Ltd.

Honolulu, Hawaii

## All Cleared

TO THE EDITOR: Since you reported the anonymous charges made against Los Angeles County's air pollution control district inspectors ("Anonymous letters received by Los Angeles County officials touched off a grand jury investigation of shakedown charges against air pollution control inspectors" . . . CW Newsletter, June 26), I am sure that you will want to carry the sequel, which is well summed up in the enclosed editorial from the *Los Angeles Mirror* . . .

GORDON P. LARSON

Director

Air Pollution Control District  
County of Los Angeles, Calif.

*Glad to. In essence, the district attorney's office has announced that exhaustive investigation has shown no proof of the anonymously made charges.*

*Thus, these county employees had been unfairly and wrongfully attacked by a publicity-seeking accuser and now have been officially cleared.—ED.*

## DATES AHEAD

American Pharmaceutical Assn., annual meeting, Statler hotel, Boston, Aug. 22-27.

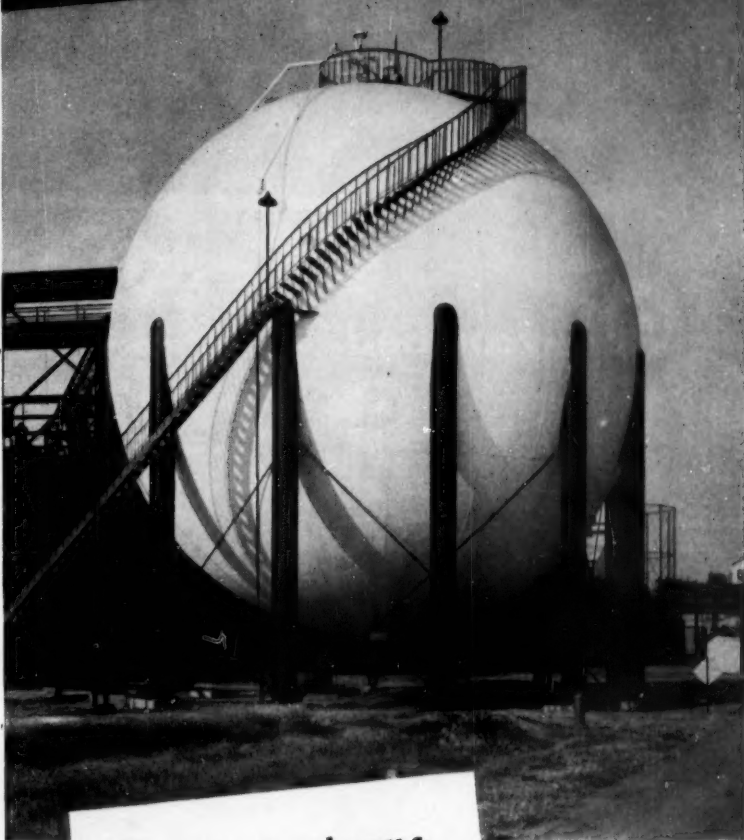
World Congress on Surface Active Agents, Sorbonne, Paris, France, Aug. 30-Sept. 3.

National Agricultural Chemicals Assn., annual meeting, Essex and Sussex hotel, Spring Lake, N.J., Sept. 8-10.

International Congress of Industrial Chemistry, Brussels, Belgium, Sept. 11-19.

American Chemical Society, national meeting, Statler hotel, New York, Sept. 12-17.

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## NEWSLETTER

Almost before the ink was dry on the Federal Power Commission's approval of Pacific Northwest Pipeline Corp.'s application to deliver natural gas to the Pacific Northwest, Spokane Gas & Fuel signed a contract with the pipeline company, its parent firm, for gas to supply Spokane homes and industrial establishments. The contract calls for 14 million cu. ft./day by the end of the first year, 27 million by the end of the third.

Still to be finally settled is Pacific Northwest Pipeline's authority to serve the area. The FPC decision (CW Newsletter, June 26) has been challenged by unsuccessful applicant Westcoast Transmission Co. Ltd., a Canadian firm, which has appealed for a rehearing.

Two quiescent pollution fracas flared into the open again last week, reminded industry of its continuing problem:

Charges of contempt were brought against National Petro-Chemicals, Tuscola, Ill., for allegedly polluting the Kaskaskia River. The local circuit court enjoined the firm last March 31 from polluting the stream, and periodic tests since then have shown compliance. But the state's chief sanitary engineer says that pollution started again July 20 and continued for a week. Now the state has asked the court to order the firm to show cause why it should not be held in contempt of the restraining injunction.

And in Beaumont, Tex., over-the-weekend fumes brought residents, after a two month's respite, back to the commissioner's court with a request for "some concrete answer" on whether Texas Gulf Sulphur had taken every step possible to prevent air pollution. The judge withheld action in expectation of a report from state health officials.

In two other arenas, chemicals dropped one decision but were winning another:

Southern Bell Telephone decided to stop spraying herbicides along frequently traveled highways in North Carolina. Outraged citizens of the state have decried the use of "poisonous" chemicals; some had started referring to the method of killing off leafy vegetation along the firm's right-of-way as a "scorched earth" policy.

Although disclaiming that the chemicals were either poisonous or that they would have any permanent adverse effect on the scenery, State Manager C. L. Lott said: "Southern Bell regrets that some of its spraying operations have temporarily affected the natural beauty of the roadside along a number of highways. All spraying operations along frequently traveled highways have been discontinued."

In east-central Kansas, meanwhile, the 4,347 citizens of Osawatimie are celebrating the fact that they're members of the 1,000th community in the country to adopt fluoridation. According to the American Dental Assn., 19.4% of the people in the U. S. who are served by public water supplies are now drinking fluoridated water.

A new agricultural service will arouse interest in, possibly boost sales of mineral trace elements.

National Spectrographic Laboratories, Cleveland, now analyzes leaves from fruit trees or grapevines, reports back to its farmer clients whether their trees or vines are deficient in any minerals.

A different sort of service is being inaugurated by Metal Hydrides (Beverly, Mass.) to broaden the scope of hydride reductions. It's starting a policy whereby companies can ship materials to Metal Hydrides on a contract basis, have the desired reduction carried out and the material returned to them for additional processing. This, as Metal Hydrides sees it, will place the technique within the range of firms that could use it to advantage but that are either unwilling to tie up money in the necessary equipment or are unfamiliar with the hydrides.

•  
The Texas Co. is making a bigger thing of research. Until now, its technical and research division has been an arm of the Refining Dept., but it has now been given departmental status.

It is also expanding its principal laboratory at Beacon, N. Y.

•  
Across the border in Canada, things are moving fast and furious:

- Canadian Industries (1954) Ltd. has decided to lay out \$18 million by the end of next year for expansion, development and improvement; one-third of it will be spent this year. Company officials say the sum is part of an expansion plan that's likely to bring the firm's fixed investment to a figure roughly equivalent to that of the C I L organization before the recent split. They think it can be done in three or four years.

- Another \$18-million project is a fertilizer plant scheduled for southern Alberta. At a meeting of shareholders, officials of New British Dominion Oil Co. revealed that plans, involving ammonium nitrate, were nearing completion.

- The Scott Paper Co. will acquire a half interest in the Westminster Paper Co. of New Westminster, B. C.

•  
Commerce Dept. has turned in another report on the newsprint situation: This time it's a 368-page report on the economic and technical possibilities of producing newsprint from hardwood. It's a companion study to an earlier one—also done for the House Judiciary Committee—on the possibilities of producing newsprint from bagasse.

The only recommendations for government action came from Assistant Secretary of Commerce Lothair Teetor, and they had nothing to do with the hardwood processes discussed in the report. First, he suggested an investigation to find out what is retarding the utilization of the Alaskan wood resources in the manufacture of newsprint.

The report by Commerce consultant Jesse J. Friedman said among the several available processes the most promising are the chemigroundwood, neutral sulfite semichemical and cold soda processes.

The chemigroundwood process, which is commercially most advanced, is suitable for pulping poplar, birch, beech and maple for newsprint use without bleaching. This process has been adopted by the Great Northern Paper Co.

•  
American Pipe Line Co. of New York, which is building a \$170-million, 26-in. pipeline from the Houston-Beaumont area to Newark, N. J., is now looking over sites around Louisville for a \$2.5 to \$3-million terminal that would transfer the petroleum to barges.

... The Editors



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# Making pure Ethylene from Raw Gas

Here, silhouetted against the sky, are giant distillation and absorber towers in the new Canadian Industries Limited Plant at Edmonton, Alberta. Since late last year this plant has been producing highest purity ethylene from natural gas for use in the manufacture of polyethylene.

These operations involve the recovery of ethane from dry gas by absorption at elevated pressure in a "sponge oil." This "sponge oil" is then stripped of its ethane content which in turn is "cracked." The resulting ethylene is then compressed, dried, separated and purified by fractional distillation at 500 p.s.i., and stored under pressure as a liquid.

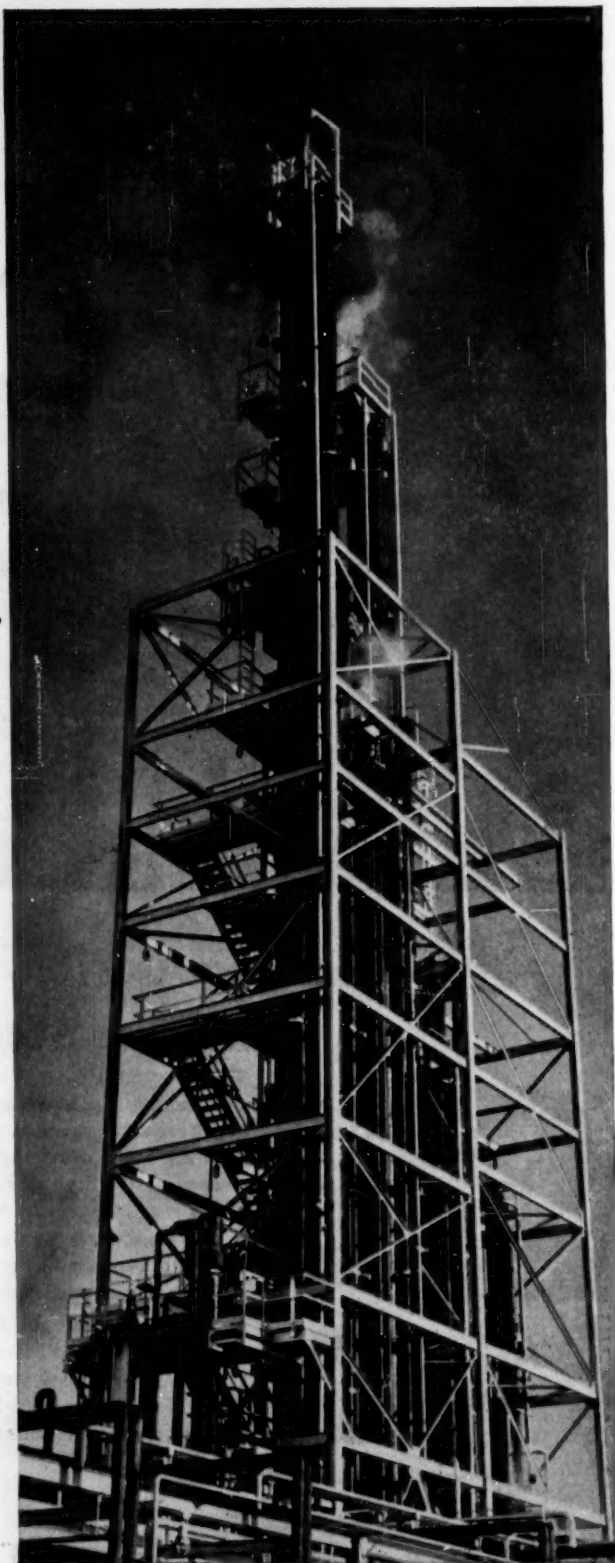
Graver fabricated four of these towers to ASME standards for this installation. It was extremely important that such equipment be precision made to eliminate the dangers of leakage and distortion.

However, Graver is accustomed to fabricating to the highest standards. Towers, tanks, pressure vessels of every kind are built by Graver to satisfy the most exacting needs of the leading chemical and petroleum companies. For *very* highly specialized jobs, call on Graver.

## **GRAVER TANK & MFG. CO., INC.**

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...specialists in the fabrication of  
towers, tanks and process vessels

## BUSINESS &amp; INDUSTRY.

## Challenges and Checks

What with new moves on merger, pricing, and advertising law enforcement, there's never a dull moment for the Federal Trade Commission, chair-manned by Edward Howrey.

No chemical company is involved in the three topical cases, but the precedents being ground out will be of everyday concern to chemical management in months and years to come. This knowledge has company executives and lawyers watching all three acts, which are going on simultaneously, as in a three-ring circus.

In the Pillsbury action—a test case under the 1950 “antimerger” amendment to the Clayton Act—FTC faces a challenge on its jurisdiction. Replying to the commission's complaint as revised following Pillsbury's sale of certain assets to the newly organized Duff Baking Mix Corp., Pillsbury asserts that FTC has no authority to order either Pillsbury or Duff to divest themselves of the property in question.

**New Issue on Pricing:** A problem that lies close to the heart of marketing men in every manufacturing or jobbing company is involved in the Niehoff pricing decision, which the commission will now have to review. FTC Hearing Examiner Frank Hier ruled that C. E. Niehoff & Co.—Chicago auto parts maker—had violated the Robinson-Patman Act by giving different discount rates to various jobbers.

Under FTC doctrine as established in the Morton Salt case, all that's necessary to establish a violation is to show (1) that price differentials were given to competing customers; (2) that the differentials were enough to cause consumers to switch from one dealer to another; and (3) that there's a “reasonable possibility” that competition may be damaged.

The new commission put its own twist on this in a recent case involving General Foods. The commissioners held that “reasonable probability of injury to competition must be affirmatively proved” if a violation is to be found. This would make all the difference in the world to a pricing defendant; but Examiner Hier made his decision against Niehoff strictly on the Morton Salt doctrine. This puts it right on the line for the commission: if the new rule is to be established, it's up



FTC'S HOWREY: Like a circus troupe, his agency's performing in three rings.

to the commissioners to apply it now in the Niehoff case.

Chairman Howrey also has revised his agency's system of checking on whether advertising claims are out of line with products' performances. He's appointed four lawyers as members of a special task force—replacing seven advertising examiners who had no legal training—to scrutinize advertising by companies bound by cease-and-desist orders, consent stipulations, and trade practice rules.

## Striking Northward

Latest of the U.S. chemical companies to unveil expansion plans north of the border is Reichhold Chemicals, Inc., which last week confirmed its intent to build a \$750,000 phthalic anhydride plant outside Montreal. Construction work should start within the next few months.

Company executives say Reichhold's output (something around 4 million lbs. annually) will be ticketed in part for captive use (to make alkyd resins) and partly for sale to Canada's domestic market, currently about 14 million lbs./year.

That will bring Reichhold into immediate competition with Dominion Tar & Chemical Co.—the single producer of phthalic anhydride in Canada

today. Although imports of phthalic into Canada have been sizable in recent years (especially from low-cost European producers), Dominion Tar's plant at Toronto has handled the bulk of the “home market” alone. (Its most recent expansion cost \$1 million, its current rated capacity is 15 million lbs./year.)

Phthalic anhydride consumption in Canada has shown a meteoric rise in months past—now represents a near-\$3-million/year business. Last year, over 5 million lbs. went into Canadian alkyd resins alone.

“With Reichhold's additional capacity,” says board chairman Henry Reichhold, “Canada will be virtually independent of foreign imports.”

Since phthalic prices in Canada are now running 2c below U. S. prices, it should prove to be a sales scuffle well worth following.

## Time to Take Stock?

With a big boost from overseas orders for ammonium sulfate during the new fertilizer year (beginning Aug. 1), Japan stands a good chance of overcoming some of her chemical overproduction problems. Present estimates indicate that annual export sales of ammonium sulfate will increase by over 100,000 tons—to more than 600,000 tons.

Accounting for most of the gain: Communist China, which has contracted to buy 14,000 tons by the end of 1954, 93,000 tons during the first six months of 1955; India has just signed a pact to purchase 100,000 tons by the end of next March. Also committed to major purchasing agreements with Japanese producers: South Korea, which has asked to buy 20,000 tons by the end of September, the Philippines, Thailand, Argentina, Brazil and French Indo-China.

To U.S. fertilizer producers, the agreements with Communist China are far and away the most significant. Restricted by U.S. law from exporting “strategic” materials to Iron Curtain countries, they've never known where they've stood from day to day. Adding to their agitation: all the recent clamor from the China-Japan Trade Promotion Society (CW, July 17, p. 13) pointing out that Western European producers are already firmly en-

trenched in the Chinese market for chemicals.

Now that Japanese-Chinese trade is starting again in earnest, U.S. producers can be counted on to exert pressure of their own in Washington.

"But," as one exporter says, "the immediate effect may not be apparent. Unlike the situation in Japan (where Ammonium Sulphate Export Co. has been set up to handle the exporting business of the 14 leading producers in the Islands), U.S. producers haven't a single powerful spokesman to plead their case.

What may prove to be even more important to the U.S. chemical industry as a whole: Japanese chemical makers are openly hoping these new trade pacts with Red China will lay the groundwork for future deals. "Getting a start," says the Trade Promotion Society, "is the main thing today. Agreements made between Japanese and Chinese producers will form the nucleus of long-term pacts in the future—in all phases of chemical production."

"That in itself," sighs one New York exporter, "should give us all pause to consider our position very carefully." If the U.S. hopes to sell to the Chinese mainland, "it had best relax its restrictions before the market's gobbled up."

## Confirming Companies

Late first-half earnings statements were drifting in again this week, bearing up the contention that although sales are off over the first six months of 1954, prospects for the months ahead are pleasing.

- World sales of Abbott Laboratories, in the first half sank to \$42.8 million from \$44.2 million the previous year. Net earnings: \$3.8 million—in comparison with \$4.0 million in the corresponding period in 1953. Reduced government buying accounted for a substantial portion of the sales decrease. But sales in the latter months of the period "were picking up substantially."

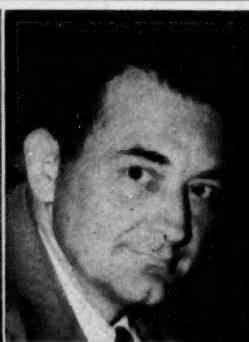
- American Potash & Chemical Corp. registered a sales gain this year—to \$11.9 million from \$11.2 million in 1953. Net profits are also up: to \$1.09 million from \$1.06 million.

- Parke, Davis & Co. saw net sales drop off slightly—to \$52.5 million from \$53.6 million; net profits gained more than 5%—to \$4.5 million.

- Pittsburgh Coke & Chemical Co., however, suffered a severe drop in both sales and earnings. Sales fell to \$18.3 million from \$28.3 million; profits to \$376,000 from \$1.8 million.



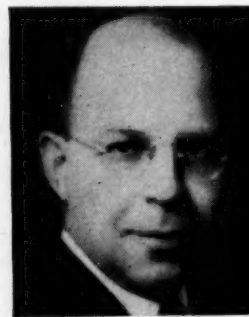
For general advice, BDSA's John Field, Carl Morrison.



In HEW, FDA's Larrick,



Agriculture's Reed (insecticides), Jacob (fertilizers).



Bureau of Mines' McCabe.



ChemicalCorps' Gen. Creasy.

## Chemical Contacts in

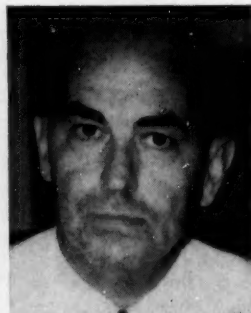
A CHEMICAL BUSINESSMAN who goes to Washington has—by and large—more bases to touch than his counterpart in, say, the electric utility field.

For some industries, Washington contacts are pretty well localized; but others, like chemicals, have people to see all over the lot.

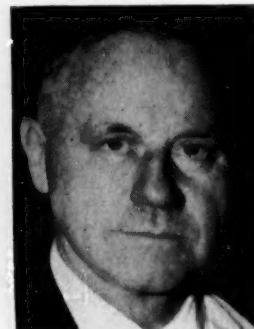
Here CW presents a gallery of some of the government officials with whom chemical people are most likely to have business transactions.



AEC's Gen. Mgr. Nichols.



TVA's new Chairman Vogel.



Customs Commissioner Kelly,





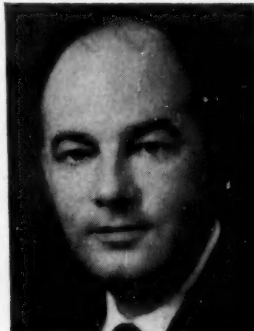
Public Health's Schwob.



Standards Bureau's Austin, Science Foundation's Seeger.



In synthetic rubber program, plant-seller Pettibone, administrators Kelly and Erwin.



## Nation's Capital—1954

Some, like John Field and Carl Morrison of the Business & Defense Services Administration, supervise staffs that have specific interests in the chemical field. BDSA's Chemical & Rubber Div. has a group of commodity experts ready to help industry men with specific problems.

Others, like FDA's George Larrick, are responsible for agency policy; Larrick, for example, would refer someone with an antibiotic certification problem to Henry Welch, who heads this service.



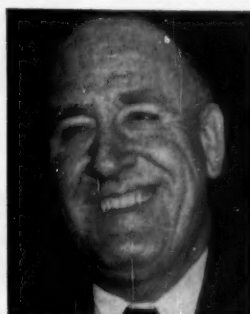
ODM's chemical chief Wolf.



Tariff Commission's Hibben.



GSA's stockpiler Walsh.



IRS alcohol tax chief Avis.

## Nickel in Nicaro

National Lead Co., as operating contractor for the General Services Administration, has finalized plans for expansion of government-owned nickel facilities at Nicaro, Cuba. Named to participate in construction: Frederick Snare Corp. and Merritt-Chapman & Scott Corp.—both of which have branch offices in Havana.

The office of Defense Mobilization has authorized an investment of up to \$43 million "in the over-all task of enlarging capacity by 75% as quickly as possible."

Both companies chosen for the bulk of the construction have been connected with government-sponsored programs in the past. The Snare Corp. built the original metallurgical plant at Nicaro during World War II—rehabilitated it for the GSA in 1951-'52. And National Lead is no newcomer to government contracts either, holds interests in the Nickel Processing Corp. (which operates the plant) and nearby ore reserves.

With such a lineup, government authorities are frankly hopeful that production quotas can be stepped up "substantially" within a matter of months.

## Cracking Down Hard?

In the hurly-burly of trying to meet today's stock market rules and regulations, most chemical company treasurers have come to accept, resignedly, the requests of the Securities & Exchange Commission. But they may be jolted out of their lethargy, by fall, if present SEC plans materialize.

Pressed by lobbying market analysts, SEC's corporate finance division is at present deep in a study to determine whether corporations selling stock to the public should be required to produce *quarterly* financial statements, instead of the now-demanded annual reports.

In itself, the idea is not a new one. Quarterly reports were ordered by the commission at the end of World War II. But those reports concern quarterly statements on gross income only.

The new plan, if accepted, would probably order inclusion of earnings figures, "other pertinent data."

"That," as one company controller points out, "spells murder for most chemical firms." Apart from the considerable expenditure of time and effort it involves, the figures "could be misleading and do incalculable harm on their face value." Because of the nature of their business, many chemical companies have year-in, year-out

seasonal surges in earnings. "In the hands of the casual reader—or the uninformed—such figures might appear unduly indicative of growth or deterioration." "To the greater number of investors it would mean nothing; to the few it *could* mean something that isn't so."

Financial analysts, however, naturally can be expected to back the SEC's study. For months now, they've been vigorously agitating for more information from companies other than the once-a-year checkup now in force.

Whether chemical companies will make their views known strongly enough (and in time) remains to be seen.

## EXPANSION . . .

**Phosphorus:** Monsanto Chemical Co.'s second elemental phosphorus furnace at Soda Springs, Idaho, will be completed next month. Construction of the new \$1-million unit, begun last March, will double Monsanto's present phosphorus output at Soda Springs.

**Aluminum Products:** The Mississippi Aluminum Corp. (which has officially not even started operations yet in its new \$550,000 home in Gulfport, Miss.) now plans an additional expansion program. Fabricating facilities will be added within the next few months. Cost: not revealed.

**Fertilizer:** The Farm Bureau Cooperative Assn., Columbus, O., will build a \$750,000 fertilizer plant at Mt. Gilead, O. Scheduled for completion by July '55, the plant will have a capacity of 70,000 tons of granulated fertilizer annually. It's the sixth such plant to be located by the FBCA in Ohio.

## COMPANIES. . . .

**More company incorporations—this week:**

- Belmay Sales, Inc. has been granted a charter of incorporation in Meridian, Miss., listing capital stock of \$10,000.

- Regenerite Corp. has filed incorporation papers in Dover, Del., listing capital of \$21,000.

- Montana Gold & Chemical Co. has filed incorporation papers—also in Delaware. Authorized capital stock: \$20,000.

- Ketona Chemical Corp. has filed in Dover, Del. Capital: 3,000 shares of stock, no par value.

- Madras Chemical Co. has filed in Dover, Del. Authorized capital stock: \$90,000.

- Venezuelan Sulphur Corp. of

America has filed a charter of incorporation in Dover. Capital stock: \$1.5 million.

- **Administrative control of Monsanto Chemical Co.'s** Anniston, Ala., plant will pass from the Inorganic Chemicals Div. to the Organic Chemicals Div. Sept. 1. Reason: a gradual shifting of emphasis in products turned out at Anniston—addition of several new organic chemicals, discontinuance of several inorganic products "due to adverse economic conditions."

- **International Minerals & Chemical Corp.** has acquired control of Sonsel Refractories Corp., Brighton, Mich. No changes in present plant management or personnel are contemplated.

- **Northwest Refining & Chemical Co.**, which plans to build a zinc oxide plant in the Spokane valley, east of Spokane, Wash., has been authorized by the Securities & Exchange Commission to make a public stock offering of 800,000 shares of stock at 25¢ each. Plans, company executives admit, have been held up because of inadequate financing arrangements.

- **Stockholders of Lindsay Chemical Co.** will vote next week on a proposal to

increase authorized common and preferred stock to allow for a five-for-one split in both issues. Also up for consideration: a stock financing move that would net the company \$1.25 million.

The additional capital, say company spokesmen, will replenish working capital depleted by recent expansion projects.

- **Food Machinery and Chemical Corp.** has purchased Chicago Pump Co., maker of sewage treatment and disposal equipment and specialty pumps. No changes in Chicago Pump's management team is contemplated; the new subsidiary will be operated as a part of FMC's Peerless Pump Division.

- **Directors of the Alliance Color & Chemical Co.**, Newark, and Blackman-Uhler Co., Spartanburg, S.C., have completed plans to merge. Also included in the consolidation are two affiliated companies—Blackman-Uhler Manufacturing Co., and Alliance Chemical Corp. The four firms will henceforth be operated under their own names as divisions of the newly formed Andover Co. Current plans include immediate construction of new manufacturing facilities in the Spartanburg area.

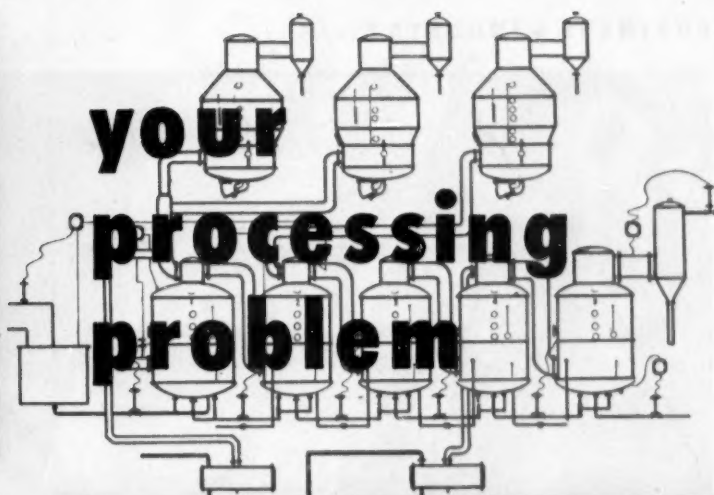


## Due for a Build-up Soon

AMONG THE FIRST manufacturers to get into production of pharmaceutical raw materials in Argentina (see p. 32) is Parafina del Plata, S.A.I.C. At a cost of 40 million pesos, Parafina's paraffin plant outside Buenos Aires, is today producing 150-200 tons/month of

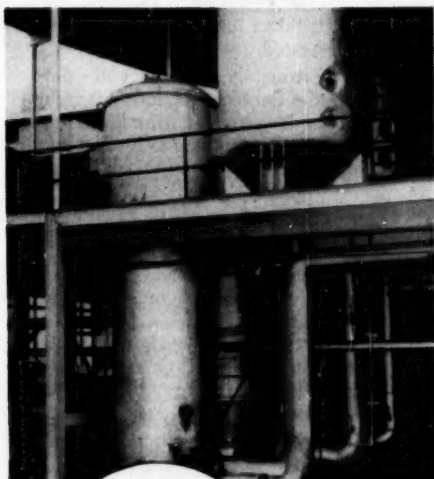
paraffin waxes, expects to increase its output to 250-300 tons within the year. On the docket: plans to turn out a series of other petroleum by-products, e.g., white oils. Parafina's domestic facilities will save Argentina more than \$2 million/year in foreign exchange.

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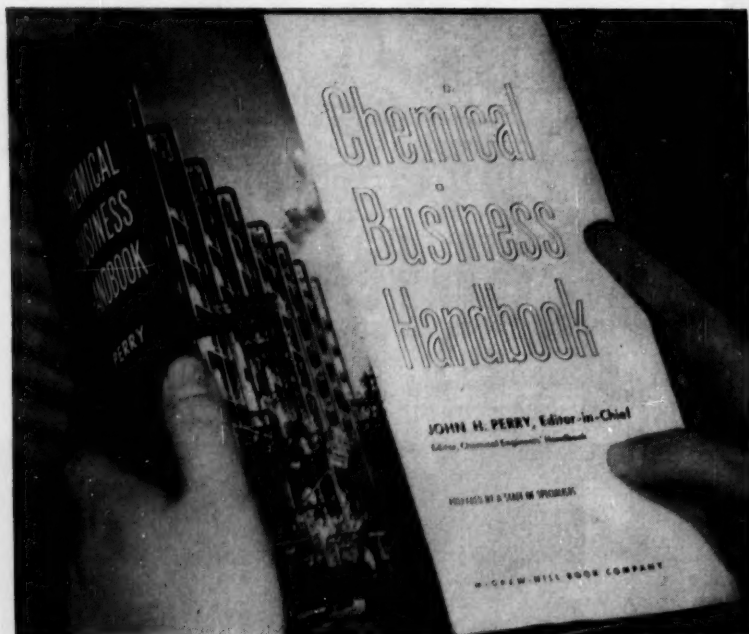
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**PERRY'S HERITAGE:** A source book of business information for chemical management is the . . .

## Realization of a Dream

It's rarely the fate of any man of literary talents that full recognition comes within his lifetime. Acclaim generally demands the passage of time—time to evaluate the true merit of a work in the light of its value.

But such was not the destiny of John H. Perry—the editor of *Chemical Engineers' Handbook*—now in its third edition. He lived to earn the esteem of his fellows throughout the industry—grateful for a work both thorough and workmanlike. Chemists and chemical engineers everywhere learned to turn to "Perry's Handbook" as a prime information source.

"Jack" Perry was never really satisfied, however. As the years rolled past, he became more and more convinced that his industry needed a companion volume—a book that would help technically trained men who were grooming themselves for more responsible management positions.

With that dream in mind he planned his *Chemical Business Handbook*—which is being published this week. Into the project, Perry poured his energies and resolution. The framework, in itself, was simple. The book he envisioned would encompass in one volume all basic information on business practices that could possibly be of consequence to management in the chemical process industries.

Authorities—specialists in all the

fields involved—were called upon. The objective: to present in layman's language an encyclopedia of CPI business practice so that any executive, on any rung of the management ladder, could have at his fingertips the basic knowledge and reference material that he might need.

Jack Perry failed to live to see his fondest dream realized. Death, last December, intervened. But carried on by others, his vision brings to the chemical industry this week 20 chapters of fact-packed pages—running the gamut from obsolescence to advertising, cost accounting to business law, finance and marketing.

Some 125 authorities contributed to the work—all specialists in a particular phase of industrial management.

Within seconds, the chemical man, puzzled over the value of advertising copy, can find a handy guide to test its merits. The problems of pollution and waste disposal are handled in relation both to community relations and legal responsibility. Hygiene standards and industrial toxicology are considered in the same carefully measured terms as are pesticide laws.

Opening chapter (edited by Irving Trust's Roland P. Soule) deals with the cost of various types of capital and provides down-to-earth examples of the cost of common equity capital of 30 industrial companies. Trends in

financing are not overlooked either. The merits of leverage to chemical companies (with specific reference to particular financing schemes) and how it has come to be a major factor in determining policy are discussed.

With regard to the subject of research ("the lifeblood of any growth company"), the coverage is broad and thorough. Outlined: concept of "what's been done by whom," what you need to set up a research department in terms of cash, personnel and facilities.

After a concise survey of the development and function of market research, the editors set out a sample report—explain everything from how to write it to what to expect from it.

**Where to Find It:** In the chapter titled market research data and sources of information there's a list of all chemical products produced today—wrapped up by name, with total output figures in the U.S., total sales and companies involved. End use patterns are summed up; unit consumption figures, export-import quotas are listed.

The role, organization, and working equipment of an efficient traffic and transportation department is appraised. What agencies can be used? Export procedures? Meaning of specific terms used in the profession?

Even the possibility that management men in the industry may have difficulties sizing up a financial statement is taken into account. That, too, is delineated.

Unfortunately, Perry will never know the debt of gratitude his industry friends owe him. But that they'll turn for years to come to his last great effort is a certainty.

## Cementing Relations

Authorization has been granted this month by Argentine government authorities to Bayer A. G., Leverkusen, to invest (in cooperation with the Argentine firm Cia. Química, S.A.) \$650,000 for a plant to produce Bayer-licensed aniline and dyes.

Incorporated under Argentina's new foreign investment law, the new plant will have to start manufacturing its products within 18 months from the date import licenses are granted for the necessary plant equipment. The company's output goal is 520,000 kilos/year of finished products, and investment and profits are to be split 45% to Bayer, 55% to Química. Further committing Bayer to a long-continued partnership: under the new law, foreign capital contributed can't be withdrawn until after 10 years.

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Dispersant NI-W	Ortho-Xylene
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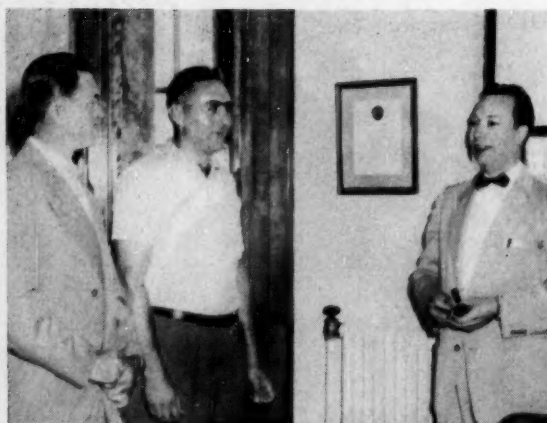
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Mercantile Securities Building, Dallas 1, Texas



THRASHING OUT AGREEMENT\* on meaning of contract provisions has cut grievances, won labor relations award, led to . . .

## Familiarity, No Contempt

Striding out of the conference room after okaying the rough draft of a new labor contract, do all the company and union officials have the same understanding of what they've just initialed? And if the negotiators have different notions about contract clauses, what about all the other people—superintendents, foremen, shop stewards and workers—who have to live with that contract?

At Ludington, Mich., Dow Chemical's Ludington Div. and Local 12773 of District 50, United Mine Workers, have found that a common understanding of the meaning of their agreement's provisions is the thing that puts life into what otherwise would be a scrap of paper and a possible cause of dissension.

This may sound elementary, but Dow-Ludington and Local 12773 have adopted a get-acquainted-with-the-contract program that has been so effective in improving labor-management relations at this plant that a citation was awarded by Research Institute of America, Inc. RIA called this project "a unique contribution to the development of executive skills in human relations and manpower utilization."

**Understanding Not Assumed:** Dow's "contract familiarization program" has grown out of experience stemming from an eight-week strike back in the spring of 1950. One factor in that dispute, according to a union official, was that neither union nor management

was doing a good job of telling the employees how things stood.

When the current contract was signed last December, the bargaining committees agreed that some special effort was needed to inform all workers on details of the provisions, rather than just trust to luck that everyone would have the same understanding of each clause.

While not startlingly new, the program is unusual and obviously effective. It works like this:

A five-man panel—the company is represented by Plant Manager L. N. Carmouche and Personnel Manager James Coats, and the union is represented by District 50 Field Representative Thomas Hartley, Local 12773 President Howard Bentz, and bargaining committee member A. E. Murphy—has been formed to talk to all plant supervisory personnel and all union officials—right down through the steward level—and to explain, almost word-by-word, the full intent of the contract.

**Uniform Viewpoints:** Those panel members studied the 41-page contract and discussed it together until they were in complete agreement on the meaning of every clause. Then 50 employees from the maintenance and production departments came to the panel for a 13-day "course of instruction."

Every provision was discussed with these stewards, foremen and supervisors who are immediately concerned with contract interpretations. Where a clause had been changed from the wording in the previous contract, panel members spelled out the new terms and the reasons for the change. There was a full explanation of new sections

that had been added and old sections that had been dropped.

Despite the panel's effort to achieve complete agreement in advance, occasional word-meaning problems cropped up. Solution: after the meeting, the panelists would review that variously interpreted clause in private, then expound their harmonized views at the next day's meeting.

**No Contract Gripes:** In this way, all plant personnel have come to accept the same interpretations. The provisions mean exactly the same to the stewards as they do to the foremen, top management, and union officials. This has averted what might have been a flood of grievances; in fact, not one grievance on the contract or its interpretation has been filed.

One reason for this is that the program wasn't dropped after the foremen and stewards got their briefings. Several contract modifications have since been agreed on, but rather than merely insert the amended clauses in the company and union files, the company had insert pages printed and distributed so that every worker could update his copy of the contract.

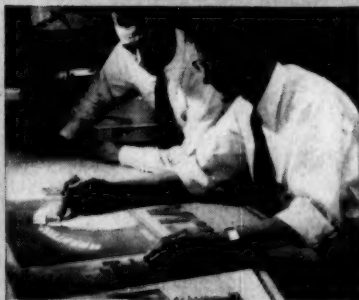
Whether the contract familiarization plan will be adopted at other Dow plants is entirely up to the managers of each plant, according to Dow's Midland headquarters. Carmouche believes it could succeed elsewhere, possibly with several panels at larger plants. But he cautions that the panel has to expound the same interpretation to each group—"word patterns must be almost identical."

Two facts gauge the success of the plan at Ludington: two other companies, after noting the city's good labor relations picture, are building new plants there; and two other firms that deal with District 50 have agreed to try the system.

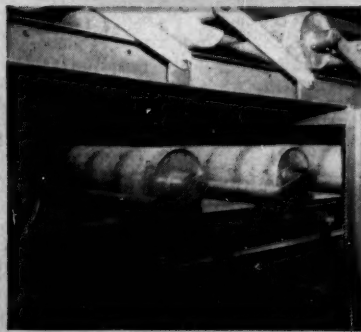
\* At one thrashing-out session, A. E. Murphy of the union's bargaining committee goes to blackboard to interpret one section in chalk and gestures. Pooling their pride in the plaque from Research Institute of America, Inc. are Tom Hartley, field representative for District 50; Howard Bentz, president of Local 12773; and Dow-Ludington Plant Manager L. N. Carmouche.



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## BUSINESS & INDUSTRY



EMC'S CAVANAUGH: A warning that effective manpower use depends on the . . .

### Principle of Selection

The chemical industry, long fretful over the technical manpower situation in this era of both cold and hot wars, will have to live with its problem for still another year. Despite its promise of last January (reiterated several times since), the Administration failed to come up with a manpower program until the tag end of the 83rd Congress last week, and legislative action on (1) military reserve call-up, and (2) occupational draft deferments has been completely washed out for this session.

For the nonce, however, the procrastination may not cause anything other than annoyance. Shortage of chemists and chemical engineers today is more potential than acute. Even though occupational deferments for graduates and young technologists already in industry have declined drastically from 32,439 in 1952 to 21,643 in 1953 and the number of scientists graduating reached a new low this year (fewer than 5,000 chemists compared with almost 11,000 in 1949-50), demand from most sectors of the industry apparently is leveling off.

But if the President were to declare a national emergency tomorrow, the chemical industry truly would be in a bad way. Roughly 25% of its technical personnel have reserve obligations, could be swallowed up instantly by the Pentagon under present law. Moreover, the supply of service returnees now easing the drain of draftees would be cut off abruptly.

One company reports it is learning to live with the draft, actually requests deferments only in exceptional cases.

The situation, it says, is much easier now than in 1950 because of the "revolving door principle"—about as many returning from as going into service. But still nursing a scar from the blow dealt it by the unexpected reserve call-up in 1950-51, this company is worried, wants a reserve program that takes into consideration industry's manpower needs.

Plenty worried, too, is another company's research division—with half its people under reserve liability. Indiscriminate recall of reservists—as a result of a crisis—would leave its research program, including government contracts, a shambles.

**New Start Now:** If anything is to be done about the situation, however, two Senate bills, introduced by Sen. Ralph Flanders (R., Vt.), now will have to be dropped in the Senate hopper again next year:

- S. 1551 would provide for selective rather than indiscriminate recall of reservists to insure optimum utilization of manpower—in both industry and the armed forces. (House counterpart of this bill is Rep. Leroy Johnson's [R., Calif.] H. 3893.)

- S. 3068 would make it easier for industry to get occupational deferments for technical personnel by adding certain clarifying phrases to the Universal Military Training and Service Act. (Industry holds that Selective Service has long favored the universal military training concept over the selective service concept—against the original intent of Congress.)

Official Administration policy on the reserve question is the joint Office of Defense Mobilization-Defense Dept. report on "Organization and Training of Military Reserves"—bounced once, revised, approved by the National Security Council, and finally declassified last week. Sure to be controversial, it calls for near-universal military training for "all qualified men" and some form of compulsory service for reservists.

With a slight nod toward industry and S. 1551, the ODM-Defense opus recommends division of the reserve force into two components: (1) an "immediately callable reserve" of 3,055,894 men, well-trained and ready for instant recall in an emergency; and (2) a "selectively callable reserve" of 750,000 men with special skills who would be called individually through Selective Service machinery.

Bone of contention when Administration proposals go before the 84th Congress will be the size of the two reserve pools. The Engineering Manpower Commission, spearhead of the

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## BUSINESS & INDUSTRY . . . . .

push for corrective legislation based on the selective recall principle, still is critical of Defense recommendations. Combined with the loss of young scientists to universal military service, a selectively callable reserve of only 750,000, says EMC's William Cavanaugh, would be unrealistic, would leave industry begging for special manpower. He adds: "That would put six million men at the beck and call of the Pentagon—almost as many as there were in World War I" (three million on active duty plus the ready reserve).

Both industry and manpower officials will admit one thing: they are up against an emotional attitude that doesn't easily yield to facts. Effective allocation of manpower, however wise, actually violates one of the public's most cherished principles—equality of sacrifice.

But with few exceptions, chemical companies are solidly behind the proposition that each individual ought to serve, in or out of uniform, wher-

ever his contribution to the national security is deemed greatest. After years of such problems, the industry seems ready to stand up and be counted when the technical manpower problem comes up for reconsideration next year.

## LABOR . . . . .

**Rare Accord:** For once, at least, organized labor is supporting the Republican administration. The bill to increase Social Security benefits and to broaden the Social Security program to include more workers—one of the six measures that President Eisenhower particularly wanted Congress to pass before adjournment—was getting hearty endorsement from labor union leaders. AFL President George Meany, testifying in favor of the bill, added that he'd prefer a bill that would go even farther in extending Social Security benefits; for example, he'd like the wage base upped to \$6,000/year. This is indicative of the



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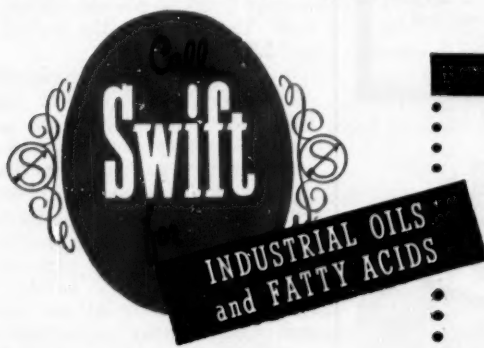
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B & I . . . . .



WIDE WORLD

**AFL'S MEANY:** For Eisenhower-backed "must" bill, strong support from labor.

number of industrial workers—including chemical employees—whose annual earnings are now in the neighborhood of that figure.

• **More Ballooning:** Additional chemical process employees are climbing into higher income brackets this month following latest puffs into the wage balloon:

• A general wage increase of 5¢/hour plus fringe benefits estimated by the union at about 7¢/hour will go into effect for more than 15,000 employees of Aluminum Co. of America who are represented by the United Steelworkers (CIO). Alcoa says this boost in labor costs will necessitate a rise in aluminum prices.

• At Freeport, Tex., representatives of Dow's Texas Div. and the International Union of Operating Engineers (AFL) say they've agreed on a 7¢/hour wage rise for the approximately 2,000 employees under contract. This will hoist the highest rate to \$2.53/hour.

• For about 1,500 employees at Monsanto's plastics plant at Springfield, Mass., there'll be a general 5¢ wage boost plus new fringe benefits worth another 2¢/hour, according to officials of the company and of the International Union of Electrical Workers (CIO). Fringe benefits include a 1¢ hike in shift premium, an extra day's pay for a holiday that falls in a vacation period, and elimination of the women's wage differential.

• Semet-Solvay Div., Allied Chemical & Dye Corp., is increasing wages by 6¢/hour for some 300 employees at Tonawanda, N.Y. Another 5¢ rise is



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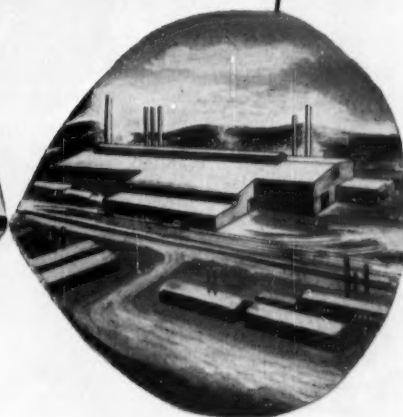
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B & I . . . . .

scheduled for next July 15. A representative of District 50, United Mine Workers, says the new contract gives employees their first pension plan and raises holiday pay from double time to 2½ times base rates.

• At the still-new chemical center at Calvert City, Ky., three new labor contracts have been signed: National Carbide and the United Gas, Coke & Chemical Workers (CIO) have agreed on a 5¢/hour increase for about 240 employees; Pittsburgh Metallurgical and the United Auto Workers (CIO) have negotiated a 5¢ boost; and Pennsylvania Salt's new pact with the International Assn. of Machinists (AFL) calls for wage rises averaging about 6¢/hour.

• Among new wage agreements for various locals of the International Chemical Workers Union (AFL): A two-year contract with Simoniz Co. at Kankakee, Ill., calling for a wage increase reported at about 12¢/hour; a 40-month contract with Shawinigan Resins in Springfield, Mass., providing for an 8¢ pay boost with yearly wage reopeners; a two-year contract with American Cyanamid at Marietta, O., including a 7¢ across-the-board wage rise; and a one-year contract with Dow Chemical at Pittsburg, Calif., calling for a 5¢/hour general increase and guaranteed holiday pay.

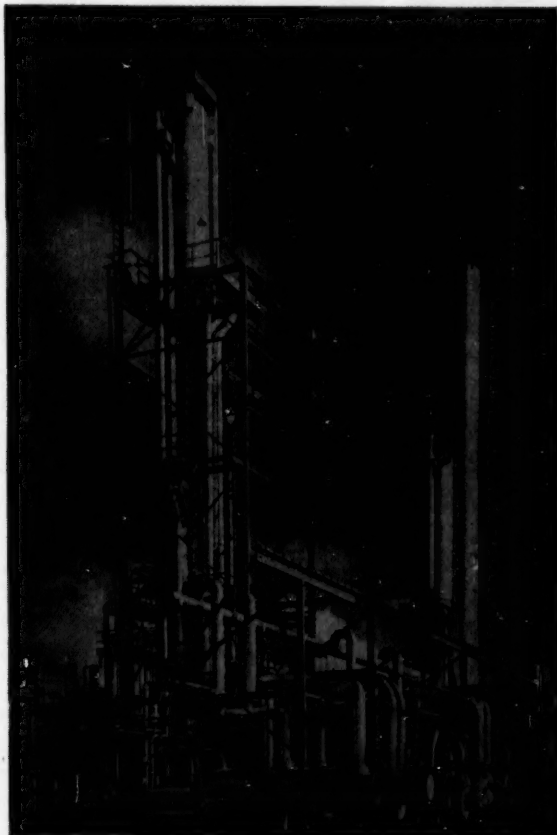
• **Mine-Mill Loss:** Another recent gain for the International Chemical Workers Union (AFL) came in an election at the nitrogen plant of Consolidated Mining & Smelting Co. at Calgary, Alberta, where employees voted to change their affiliation from the International Union of Mine, Mill & Smelter Workers to ICWU.

• **Turnover Rate Rises:** The coming of summer brought seasonal increases in hiring rates in various industries; for chemical companies, new employees were joining staffs and plant forces in June at a pace 150% more rapidly than in May, according to latest figures from the U.S. Bureau of Labor Statistics. The chemical hiring rate this past June was 3.3 accessions per 100 employees, compared with the 3.7 figure for the same month last year.

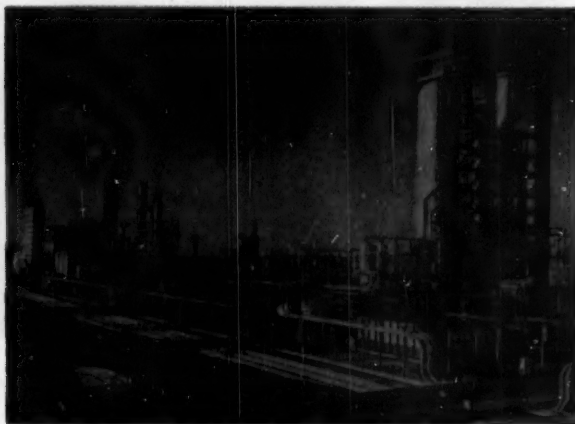
• **Ampler Pensions:** Atlas Powder has revised its pension program "to provide a more satisfactory basis for future retirements." The new formula will provide a pension independent of Social Security benefits. For an employee whose average earnings were \$440/month and who retires at age 65 after 30 years' service, pension payments would be \$90/month.

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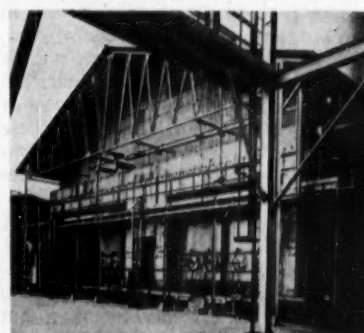
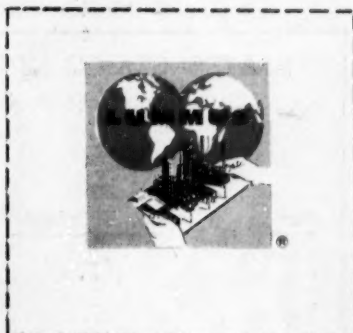
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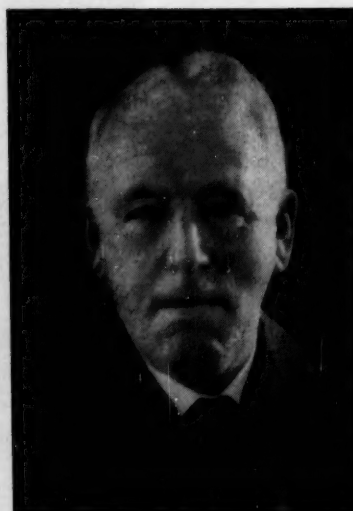
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DAILY HERALD, LONDON



HOWARD COSTER, LONDON

LABOR PARTY'S BEVAN, I.C.I.'S FLECK: In global battle between socialism and capitalism, they clash over role for . . .

## Chemicals in Atom Age: Liberty or Leash?

U. S. chemical companies occupy a key position in the worldwide struggle over private vs public ownership—a conflict that's intertwined with the cold war.

With most of the world's population now served—more or less—by state-owned industries, people are comparing those nationalized operations with U. S. free-enterprise.

Outcome of the contest between government-run and private-capital chemical concerns will determine world chemical trade patterns, indirectly influence industry growth.

They're slugging it out this week and for many weeks to come—truly the battle of the century, the strife over ownership of the means of production.

In parliaments, in the press, in schools and clubs and public squares, in political in-fighting wherever there are people to vote and consume, the combat goes on between advocates of capitalism and of socialism. It's closely related to the cold war with the Communist countries, in which the state plans all, owns all, runs all.

Relatively speaking, the noise of this battle is only a murmur in the U.S. Our federal government owns numerous chemical process plants (CW, May 15, p. 20) and other factories, but most of these are wartime works now being sold into private ownership or else mothballed. And even the leader\* of the Socialist Party in this country has cooled his ardor for state ownership.

\* What they've seen happening in Fascist and Communist countries, says Socialist leader Norman Thomas, has helped lessen his party members' insistence on state ownership.

**Congeeing Effect:** But in most other parts of the free world, substantial sections of the population lean toward the

notion that government control is the sure recipe for a stable economy with comfort and security for all. This notion's popularity—which varies considerably from country to country and from year to year—has led to the nationalization of chemical plants in many nations, and there's incessant pressure for nailing "Government Property" signs to the walls of many more plants.

This week, thousands of tons of chemicals, fertilizers and pharmaceuticals are pouring out of state-owned plants throughout the heavily indus-

### STATES' STAKES IN CHEMICAL PRODUCTION

(State-owned chemical industries in Europe, 1954)

Nation	No. of plants	No. of employees	Pct. of Country's Chemical Output
Austria	2	4,500	19%
Denmark	2*	(not available)	0.3%
Finland	12	12,450	5%
France	12* (est.)	11,500 (est.)	5%
Germany (Western)	3	5,300	2% (est.)
Italy	5	3,000	2%
Netherlands	7 (est.)	7,300	5%
Sweden	3	1,200	1%
United Kingdom	30** (est.)	50,000 (est.)	1%

\* Includes munitions plants.

\*\* Includes munitions plants and chemical by-product facilities in coal, steel, and gas works.

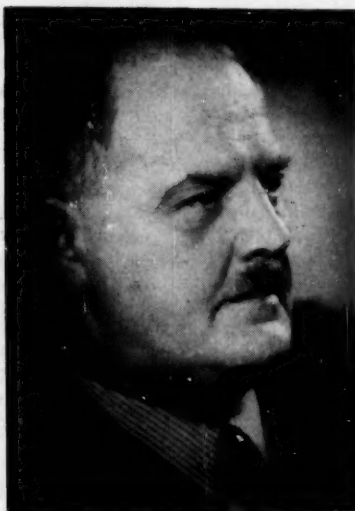


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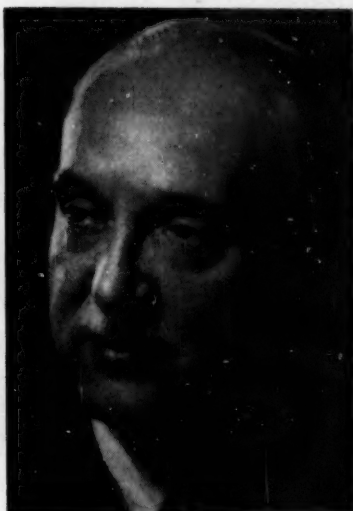


PHOTO-FAYER, VIENNA



WILHELM FAYER, ZURICH

**AUSTRIA'S RAAB, SCHAERF, LINDER:** In coalition government, socialistic doctrine is diluted in practical compromises.

trialized nations of Europe (*see table*). In those same countries, Socialists and Communists—sometimes speaking for half the electorate—are demanding that nationalization of industry be pushed to a speedy completion.

Against that background, chemical companies in the U.S. can hardly be blamed for their persistent demands that their government withdraw from peacetime chemical operations before permanency sets in. And they can also be apprehensive about the rigidity that afflicts world trade sinews when chemical process industries are nationalized in other lands.

**Chance and Design:** In a few instances, chemical plants have fallen into government hands through circumstance; in this category are the formerly German-owned plants seized during and immediately after World War II, such as the Persil detergent concern in Belgium, which last year was sold back to its original owners, the Henkel group.

But in other cases, chemical enterprises have been taken over in accordance with socialistic plans for remaking the economic order. In France, for example, in the process of nationalizing the coal industry in 1946, the state also took over chemical by-product plants; and these continue to be operated as part of the business of Charbonnages de France. These plants produce ammonia, nitric acid, calcium carbide, cyanamide, nitrogen fertilizers, methanol and coal-tar derivatives, virtually dominating those fields in France.

Similarly, the Netherlands govern-

ment has gotten into the chemical business through acquisition of the State Coal Mines near Heerlen. These plants have undergone extensive expansion and modernization since 1946.

**Rising Reluctance:** Europe's trend toward nationalization was strongest right after World War II; chemical plants were taken over in Austria, Britain and France. There's been increasing reluctance to carry out this policy in recent years—possibly because of heavy-handed methods of dealing with workers in state-owned plants.

But the socialization drive is continuing, particularly in the countries

that have large numbers of Socialist and Communist voters. Among the more strident voices in the clamor for nationalization of chemical industries are those of the labor union leaders pictured on the cover: Bob Edwards, general secretary of the British Chemical Workers Union; and Luciano Lama, secretary-general of the Italian Chemical Workers Union.

"Monopoly," says Edwards, "is the great curse of the British Chemical industry." He holds that "monopolistic" parts of the industry should be publicly owned. Lama—whose union is affiliated with the Communist-led General Confederation of



ITALY'S NEWS PHOTOS, ROME



PUBLIFOTO, MILAN

**ITALY'S COSTA, DI VITTORIO:** At center of their dispute, mighty Montecatini.



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**B & I . . . . .**

Italian Labor—recently introduced into the House of Deputies a detailed bill for the nationalization of Montecatini, which he charges now accounts for 75% of the country's total chemical output.

**Heated Rejoinders:** Austria's Socialist Party also has its zealots for nationalization, like Anton Linder, member of Parliament, who wants to see that "capitalism is deprived of power and influence in the Austrian economy." Since 1946, his party—whose leader is Vice-Chancellor Adolf Schaerf—has shared the responsibilities of coalition government with the conservative Peoples' Party headed by Chancellor Julius Raab; but in the necessary compromises, demands of both parties are pared by about 50%.

State-ownership enthusiasts like Edwards, Lama and Linder don't go unanswered. In Britain, Chairman of the Board Alexander Fleck of Imperial Chemical Industries spoke out sharply this summer against the Labor Party's threat to nationalize ICI if Aneurin Bevan's party wins the next general election. Earlier this year, ICI published a pamphlet in reply to a Labor Party proposal for public ownership of the chemical industry. In that booklet, Fleck argues that state ownership "would tend to stifle commercial and technical initiative, hamper the constant search for new products."

In Italy, CGIL's Communist leader, Giuseppe di Vittorio, is countered by Angelo Costa, president of Confindustria, the Italian equivalent of the National Assn. of Manufacturers in the U.S.

**Big Enough to Notice:** There's nothing insignificant about Europe's socialized chemical industries. Finland's government-owned chemical plants produce nearly 100% of that country's fertilizers; the state-owned Anorgana Chemie plant in Germany has the largest production of ethylene oxide and glycol in western Europe; Italy's boric acid and borax works at Lardarello controls that country's entire output of those products; and Austria's two publicly owned chemical plants account for nearly 47% of the nation's total chemical exports.

It's obvious that these operations are big enough to affect chemical commerce throughout the free world. It's also apparent that the peoples of the free nations are comparing the companies that are at liberty to grow and change with the companies that are kept on a governmental leash. What they see of U.S. chemical companies will play a large part in helping those peoples formulate their decision for the industry.



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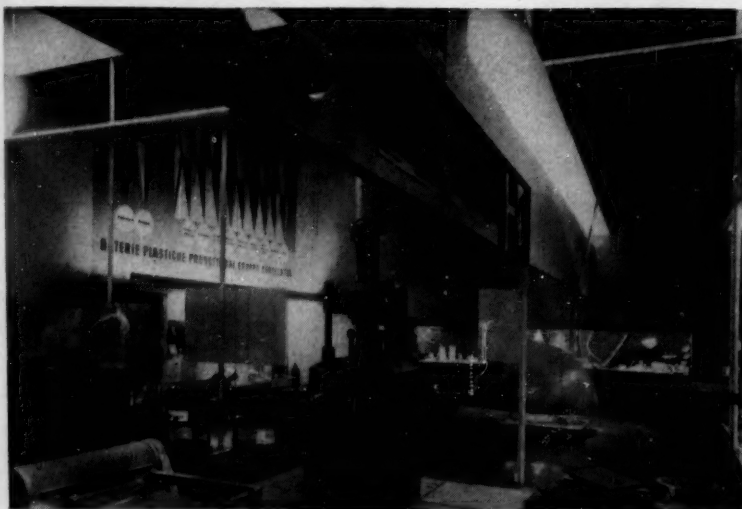
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## BUSINESS & INDUSTRY



AT MILAN'S LATEST FAIR: Only a corner of the chemical pavilion.

### FOREIGN

**Foreign Trade Fairs:** Chemical exhibits at trade fairs this year in Europe are getting bigger and more elaborate. This year's Milan Fair (*see cut*) reached a new high in both number of displays and range of products exhibited. Next on the docket: the Leipzig Fair in September, followed by shows in France and the Netherlands.

**Pharmaceuticals/Argentina:** With raw materials completely depleted, Argentina today is running short of many lines of pharmaceutical preparations. Lack of foreign exchange, local observers report, is the main cause of the shortage, but U.S. companies will probably bear the brunt of the trouble.

Well aware of the problem, the Argentine Central Bank shortly plans to allocate new import licenses to all 10 of the U.S. companies involved (Squibb, Parke-Davis, Abbott Laboratories, Sharp & Dohme, Lederle, Armour, Warner-Hudnut, Schering, John Wyeth and Winthrop)—but the overall dollar distribution will probably provide only temporary relief.

**Expansion/French North Africa:** Three new companies have been set up recently in southern Algeria to manufacture nitrogenous fertilizers, cement and manganese.

The first of the three, known as the Societe d'Etudes Nord-Africaines de l'Azote, plans to build a 1,500 to 2,000-million franc plant at Colomb-Bechar with a capacity of 100,000 tons of fertilizers annually. Founders of the firm include Air Liquide (France), Indufina (Germany) and the

Baillencourt-Coppet group (a subsidiary of the Italian chemical colossus—Montecatini).

**Exports/Japan:** Japan's validated exports to Communist China for the first five months of 1954 totaled £1.9 million—of which £1.1 million were made in May. Credited for the greatest increase: rayon yarns, ammonium sulfate, caustic soda, pharmaceuticals.

But the quota's sure to rise even higher in the months ahead, say representatives of the Ministry of International Trade and Industry. Reason: 11 more items have been removed from the export ban list—bringing the total so far removed to about 500, thereby placing Japan on an even footing with nations in Western Europe as far as trade restrictions with Red China are concerned.

### LEGAL

**In Muddle's Middle:** Chairman Jerome Kuykendall and the Federal Power Commission are being pushed and shoved from all directions in the scrap over regulation of natural gas rates. The U.S. Supreme Court has, in effect, ordered FPC to start policing the price of gas sold by independent producers into interstate commerce; but Congressional leaders are opposing FPC's request for money to finance that policing. Sen. Lyndon Johnson (D., Tex.) points out that a motion for reconsideration of the Phillips decision is pending before the court, and argues that nothing will be lost by waiting until next year to start the regulating chores.

Meanwhile, interested parties are concerned about how the decision may

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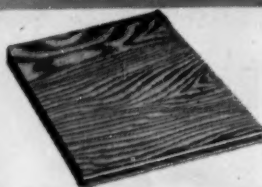
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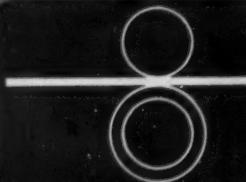
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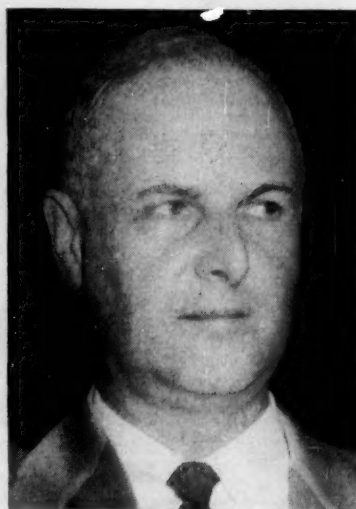


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B & I . . . . .



WIDE WORLD

**FPC'S KUYKENDALL:** In battle over  
rate regulation, he's in the middle.

affect supply of natural gas in the North. Allied Chemical says it will expand its Omaha nitrogen plant when it's assured of enough gas, and officials from Detroit told FPC last week that a pipeline company has been keeping the Detroit area "starved" for natural gas. Pipeline company spokesmen have intimated that the decision may delay their expansion plans.

**Annexation Upheld:** The Texas state supreme court has upheld the annexation move by the city of Deer Park, near Houston, to incorporate into the city limits the land on which are located the plants of Shell Oil and Shell Chemical companies. If Deer Park's city council accepts the valuation placed on those properties by the local school district, the city's taxable property valuation will leap from its present total of about \$200,000 to a peak of \$37.2 million. The state high court justices voted six to three against Shell's request for a rehearing, leaving the corporation only the unlikely recourse of an appeal to the U.S. Supreme Court.

**Schering Patents:** As of this week, there's no decision in the federal government's suit to enforce licensing of certain Schering Corp. patents at reasonable royalty rates, although one source expects that this decision may be forthcoming within a month. Meanwhile, Schering has brought suit against two smaller companies accused of patent infringement, unfair competition, and copyright infringement. Schering says that Delmond Pharmaceutical and the affiliated Italian Drug

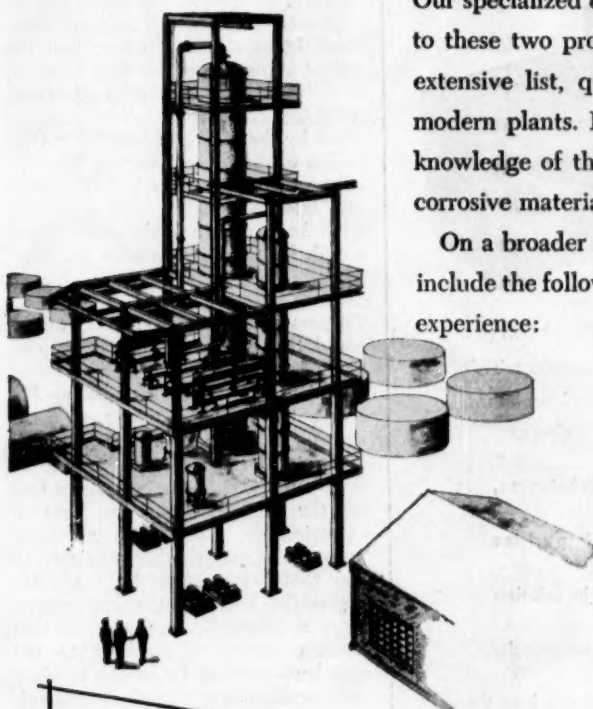
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## ● Catalytic Polymerization

## ● Secondary Butyl Alcohol Synthesis

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by conventional, azeotropic and extractive  
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Pharmaceuticals

*If you have any plans involving a new plant or unit, expansion or modernization, we shall be glad to discuss them and outline our methods of procedure.*

# Engineering

Design and Construction  
of Process Plants

Design and Construction  
of Process Units

Process Evaluations

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For further information, write for Data File 92-17

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B & I . . . . .

Importing Co., New York City, applied for licenses to make aryl-2-pyridyl amino alkanes under Schering patent No. 2,567,245; but that even though the applications were denied, those companies have been making (or contracting for the manufacture of) and selling that compound. The complaint also charges that the defendant companies have been using a "Directions to physicians" leaflet that uses information and wording from a folder published and copyrighted by Schering.

Delmond and Italian Drug deny the charges, promise that this suit will be contested vigorously. Company President Ignazio Firacci asserts that the patent in question is one that Schering is obligated to license under the agreement that covered the sale of Schering stock by the U.S. Alien Property Custodian to the present owners. He says his companies consider that they have an "interim license," and that they have been setting aside money each month for royalty payments to Schering.

**Corporate Engineering:** The anticipated test case over corporate practice of engineering in the state of Washington (CW, June 19, p. 22) may not get into the courts, after all. Before the Washington Society of Professional Engineers got around to complaining about the companies that did the engineering on two new oil refineries, the state attorney general was told about another engineering firm that was said to be practicing engineering under its corporate name. After a conference, officials of that concern agreed to conform to the state law—probably by having its plans and specifications signed by individual employees who hold appropriate engineering licenses.

## KEY CHANGES . .

**W. B. Copeland**, to executive vice-president, and **S. L. Lott**, to treasurer and controller, The Smith-Douglass Co., Norfolk, Va.

**Russell T. Drennan**, to general sales manager, Kaiser Chemicals Div., Kaiser Aluminum & Chemical Corp., Oakland, Calif.

**John C. Knochel**, to president, Truscon Laboratories, Detroit.

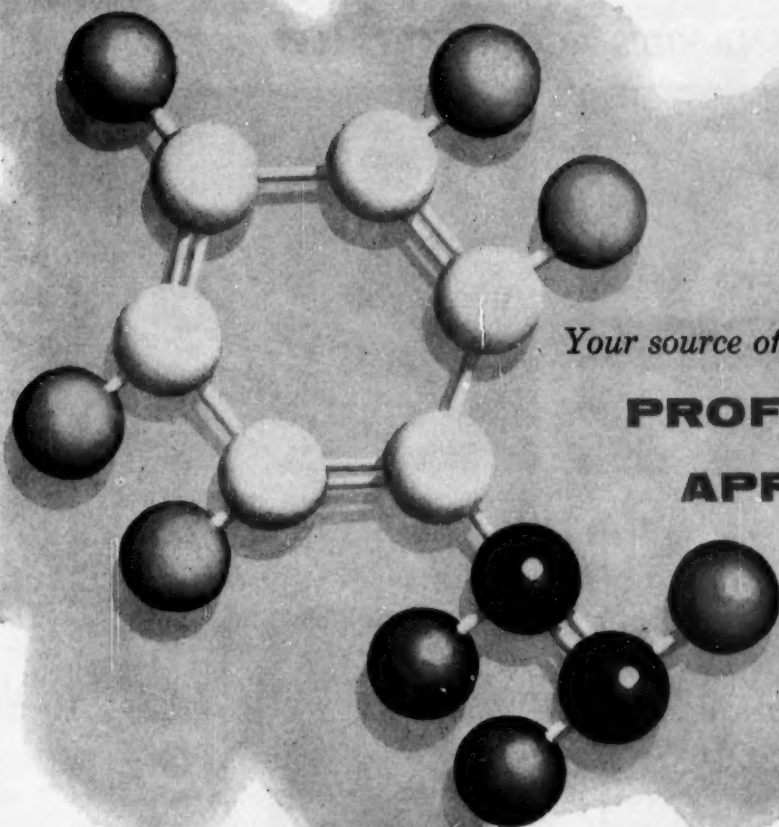
**George A. Radford**, to executive vice-president and general manager, Boyer Chemical Co., Chicago.

**M. Halpern**, to senior vice-president, and **F. H. Holmes**, to vice-president, Research and Technical Dept., The Texas Co., New York City.



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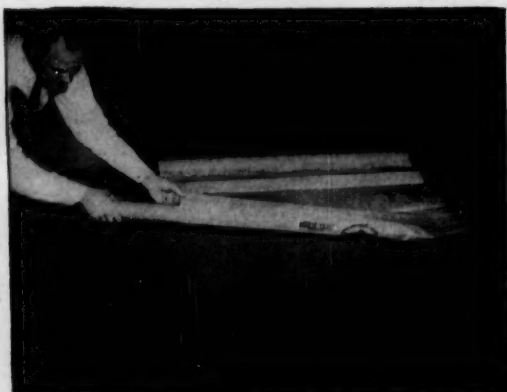
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Cyanamid is now shipping AERO\* Phthalic Anhydride on ACCOPAK Pallets. You can save money and time

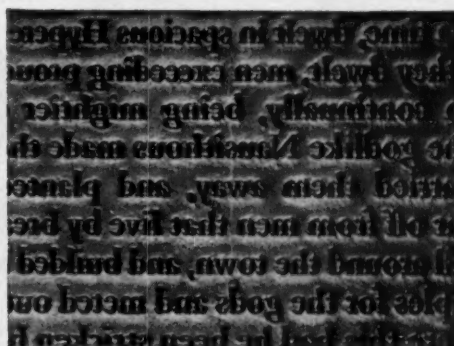
in unloading. Bags arrive "unitized" on these pallets. One man can unload and store an ACCOPAK palletized shipment in one-fifth the time it takes to handle non-unitized bags—with no helper needed. Handling is simple. Bayonet forks, easily attached to any type fork lift truck, slip into durable cardboard tubes inserted in ACCOPAK sling and cannot damage the bags.

\*Trade-mark

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# Chemical Newsfront



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DOW



## How to Make Acid Etch at Right Angles

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CW8-54

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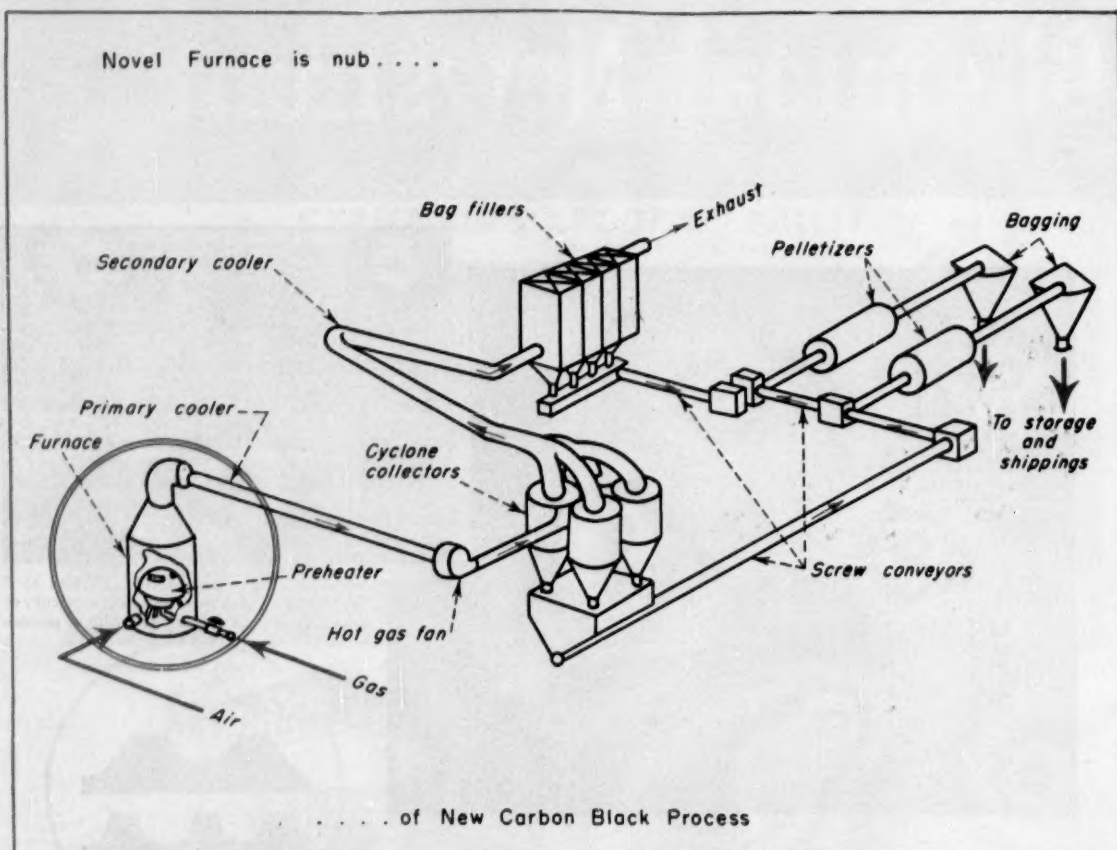
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# PRODUCTION . . . . .



PROPOSED CARBON BLACK PLANT: For the future, an integrated 2.5-million-c.f.d. operation.

## Carbon Black Dark Horse

After two years in development, a new carbon black process is ready to make its commercial debut.

A novel spherical heating unit is the nub of the operation, now somewhat modified from its original outline.

Carbon black handicappers give process due credit, but concede it only an outside chance of finishing in the money.

Two years ago, Rice Lynn, a Texas attorney, came up with a new method of making carbon black, called it the Lynn Furmatic process, and incorporated as the Lynn Carbon Black Co. (San Angelo). Last month, after some modification of the original process, Lynn assigned exclusive rights to the process to Consolidated Carbon Corp. of Illinois—a Chicago firm “formed to exploit the Lynn patents.” Last week, as industry was astir with speculation, Lynn declared that Consolidated, in contract with consulting engineer William Balka of Dallas, is completing preliminary design and engineering

work on the first of 10 proposed Furmatic plants; estimated cost: about \$400,000; location: Texas (exact site to be revealed later); processing capacity: 2.5 million cu. ft./day of natural gas.

Under terms of the licensing agreement, Consolidated will build all 10 plants before the end of 1963, pay Lynn \$30,000 per plant for construction supervision plus graduated royalties that in 1963 would total \$1,350,000, based on 1¢/lb. for all carbon black processed by the Furmatic operation.

**Fair Exchange:** In return for the

royalties, Consolidated will receive rights to a process its vice-president, Joseph Plunkett, describes as “far superior to other methods investigated.” Sample claims: Plunkett avers that the Lynn operation is smokeless; that, based on poundal recovery, initial investment runs 30-50% lower than conventional methods; that yields are greater, operating costs less.

By the same token, Lynn declares he has embraced the best features of the channel, furnace and thermal designs without infringement on any of them, that operating on natural gas or on a mixture containing up to 50% oil, the process will make channel, furnace and catalytically cracked carbon black. Still in pilot operation, the newly modified Furmatic method works like this:

Natural gas, flare gas or an oil-gas mixture is piped directly into a novel spherical burning chamber within the furnace. This unit is the heart of the Lynn process and has remained unchanged from the original. A hemispherical hood surmounts the cham-

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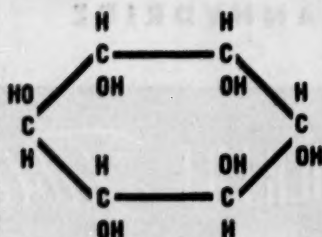
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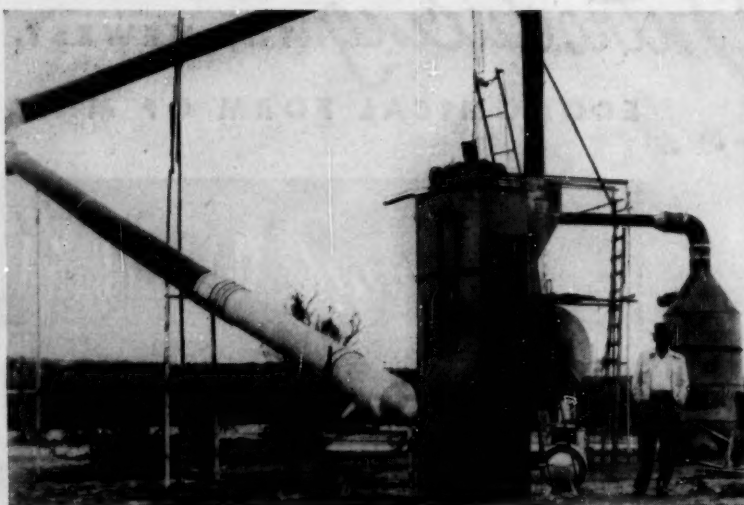
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## PRODUCTION . . . . .



LYNN PILOT PLANT: Can it span the technological gap?

ber, which has tapered holes drilled through its top half. Regulated air supply enters the furnace, is filtered, and flows up underneath the hood into the hood-chamber gap, where it mixes with gas from the tapered chamber outlets, which then burns.

The air-gas mixture escapes through butterfly baffles in the hood, flows into the upper reaches of the furnace where, says Lynn, the actual thermal cracking takes place. In the original process, the reaction mass then left through the top of the furnace, entered a screw conveyor, where the carbon black was supposed to cool and settle out. But the conveyor didn't cool the black fast enough and the burning reaction went too far. Lynn has replaced the conveyor with a primary air cooler and has added a hot-gas fan to the system (*see cut*).

Now, atmospheric air running countercurrent to the process stream cools the combustion products from the furnace, gives the carbon black an opportunity to settle out and agglomerate before it is blown into a series of cyclone collectors. From the cyclones, most of the black passes through a secondary air cooler into tubular filters made of Orlon acrylic fiber. In the first proposed Fumatic plant, both the black from the filters and that which dropped through the cyclones will be routed by screw conveyors into pelletizers, thence to bagging, storage and shipment.

But as an alternative to pelletizing, says Lynn, the black could be fluffed. Originally, Lynn used an electromagnetic accumulator in place of the tubular filters to collect the black from the cyclones; a rotary scraper removed

the black from the walls of the accumulator, dropped it onto a screw conveyor, which then carried the black to storage or additional processing units.

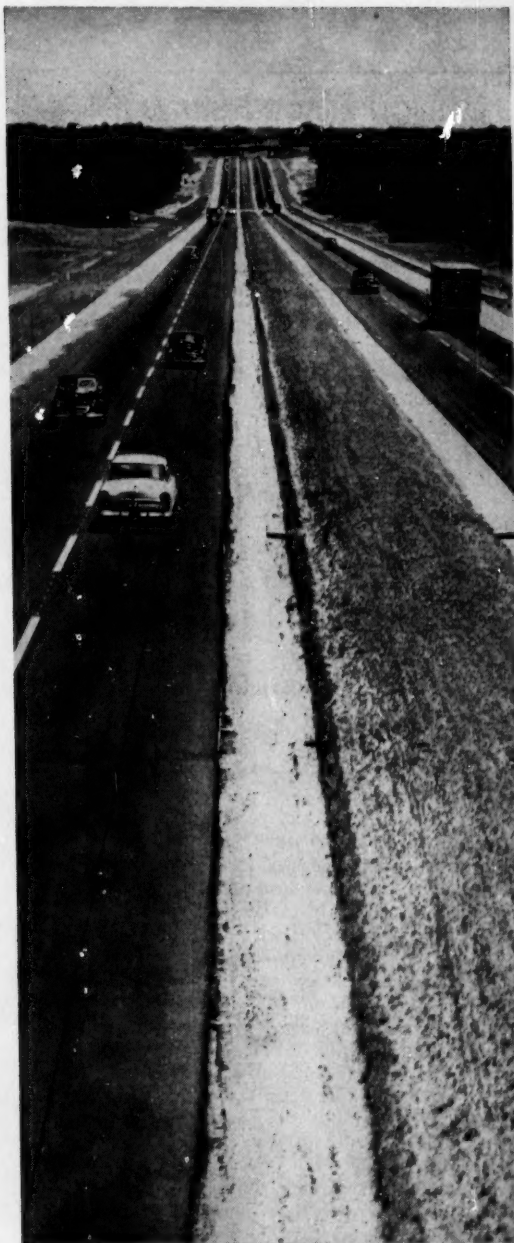
**Rosy Resume:** With the exception of bagging the black, the entire operation will be fully automatic, declares Lynn; there will be an automatic scale cutoff in the weighing, but then the bags will be handled manually. Operating costs, he estimates, will run 40% under those of conventional furnace-type processes.

Generally, two grades of black—which can be varied to meet market demands—will be made in any given run by a single-unit Fumatic plant; however, says Lynn, in a double-unit plant (with a 5-million-c.f.d. capacity) four grades of black could be made simultaneously. The cost of the twin-unit plant is estimated at \$730,000.

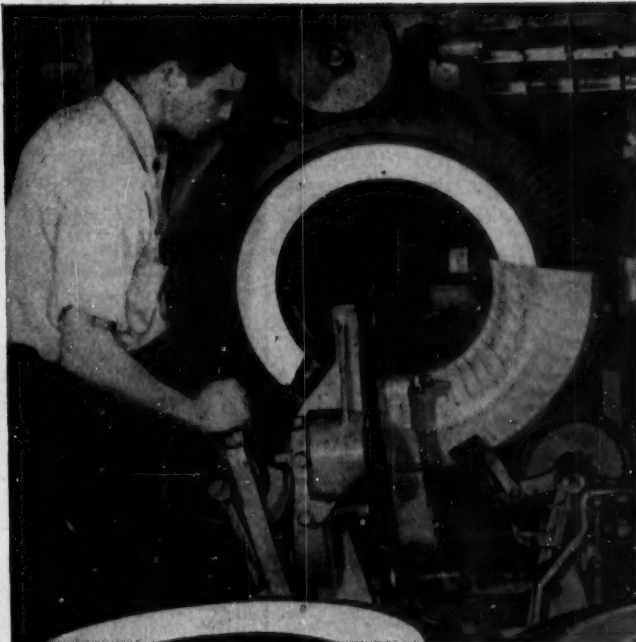
He figures that total average yield from the Fumatic process on all types of black will run 40-50% greater than conventional process yields. Of the 35 lbs. of carbon black theoretically available in 1,000 cu. ft. of natural gas, the Lynn pilot operation is said to obtain, for instance, 16.8 lbs. of medium thermal black. Claimed yields for other blacks: 9.5 lbs. of semi-reinforcing black; 6.3 lbs. of high-modulus-frequency black; 4.9 lbs. of reinforcing furnace black; or 1.6 lbs. of medium-processing channel black. Recovery from a full-scale operation, Lynn avers, probably will be even higher.

**Negative Reaction:** Until a full-scale Fumatic plant is put into operation, substantiation of process claims must, of course, remain in abeyance. Mean-



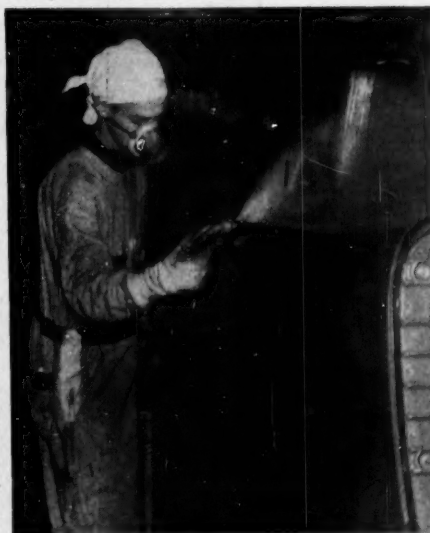


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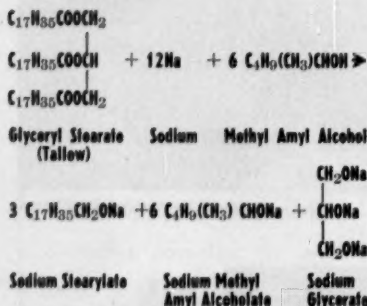
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# Xtracts

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Recognizing the widespread use of sodium, du Pont has produced a booklet on recommended procedures for handling sodium in solid, liquid or dispersion form. It tells how this highly reactive metal can be safely used in plant operations . . . what equipment is needed, what precautions should be taken. For your copy, check coupon.



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## PRODUCTION . . . . .

### CONTROVERSIAL CARBON BLACK ISSUE

The Lynn Furmatic carbon black process has given flame to a great deal of controversy; none in the field has remained indifferent to it. Many claims and counterclaims come from both sides, but the essential points boil down to these:

#### Lynn says—

- Yields will run 40-50% greater than those from conventional operations.
- Spherical heating unit is the secret of his superior operation.
- Plant is smokeless.
- Operation is automatic.
- Capital and operating costs are much lower than those of conventional carbon black works.

#### Skeptics say—

- High yields are obtained at the sacrifice of quality.
- Unit is a clever idea, but it must be altered to afford more complete combustion, reduce oil residue.
- The use of bag filters cuts down smoke in all plants.
- Most carbon black plants can be made automatic with a heavy investment in instrumentation.
- It is unlikely that a 2.5-million-c.f.d. plant for making high-quality blacks can be built for the quoted cost.

while, however, a definite reaction to the Lynn operation has set in among the rest of the carbon black producers who have been keenly eyeing the process and the product, minutely analyzing both.

To date, quantitative analyses of yield samples, according to some carbon black men, show "a hybrid black that will have to create a (market) place of its own." The samples compared most closely with standard SRF-type black, could conceivably compete with SRF in the relatively small fertilizer market. Analysis of available samples shows high oil residue (up to 10%), which, black producers feel, nullifies any cost advantage the Furmatic plant might have over the standard SRF plant.

More complete combustion, of course, would reduce the oil residue but at the same time would likely diminish the over-all yield. One carbon black researcher likened the Lynn process to the standard lampblack operation with gas substituted for the secondary layer of air that is used to protect the shield around the furnace. But in the process, he contends, the flame is cooled so fast that oil is formed.





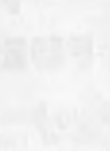









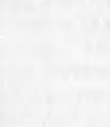





From the standpoint of modern fluid dynamics, the researcher continues, the spherical burner is a clever idea: it forms a soft diffusion flame,

permits the flame to burn with a minimum of turbulence. While a soft flame is desirable in the production of SRF black, the burner still must be perfected in order to cut down oil residue, probably altered in order to produce other types of black. And any mechanical changes in the combustion chamber would entail the danger of infringement, especially in the furnace black field where many patents are still active.

The use of cyclone collectors and tubular filters exhibits essentially modern thinking on carbon black collecting. One possible danger cited, however, is that high-oil black would tend to stick within and clog the processing lines. As to the smokeless aspect of the process, industry replies that the use of bag filters reduces smoke in any carbon black operation.

Similarly, say production men, most carbon black plants can be made automatic if producers are willing to invest heavily in instruments. And some observers don't see how any 2.5-million-c.f.d. carbon black plant can be built at the quoted Furmatic figure—even without automatic instrumentation.

Many producers also believe that the technological gap between the Lynn pilot operation and a profitable full-scale Furmatic plant is a wide one that may never be completely

OVEN STABILITY AT 450°F*	0 MINUTES	10 MINUTES	20 MINUTES	30 MINUTES	40 MINUTES
Paraplex G-62—0% Diocetyl Phthalate—100%					
Paraplex G-62—25% Diocetyl Phthalate—75%					
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\*Tests based on this vinyl formulation:

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Plasticizer . . . . . 54 parts  
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countries.

The stabilizing effect of PARAPLEX G-62 in vinyl compounds is dramatically shown by the test samples above. PARAPLEX G-60 and MONOPLEX S-71 give similar results. Tests of durability, including Fade-Ometer, Weather-Ometer, and outdoor exposure, also demonstrate the ability of these plasticizer-stabilizers to impart resistance to embrittlement and discoloration.

In addition to their stabilizing effect, here are other key advantages of these Rohm & Haas plasticizers:

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**PARAPLEX G-62**—polymeric-type, low volatility, low migration, excellent resistance to extraction by soapy water, oil and gasoline.

**MONOPLEX S-71**—monomeric-type, flexibility at low temperature, high plasticizing efficiency, lower volatility than conventional monomeric plasticizers.

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## PRODUCTION . . . . .

spanned. In describing the carbon black industry, the president of one large company declared that it was a nice business to be in but a hectic one for a neophyte. Most carbon black men still have a lot to learn and mistakes still to be made; and the neophyte must spend money on past as well as future errors.

At this point, they feel that not only the feasibility but the ultimate survival of the Furmatic carbon black process is a moot question. Some observers think that Lynn definitely has some potentially profitable ideas; others concede nothing. But nobody in the carbon black field is indifferent to the development.

### One, Two, Three

Howe Sound put the process through its paces first at Garfield, Utah (*CW*, Sept. 26, '53, p. 49); Sherritt Gordon Mines Ltd. then took it over the hurdles at Fort Saskatchewan, Alberta (*CW*, June 12, '54, p. 46); and now, Whitaker Metals Corp. has the operation in and running at Kansas City, Mo.

It's the process developed by Chemical Construction Corp. and Sherritt Gordon. All three firms use it for the chemical refining of metals, but the differences in each version are more than a matter of miles.

Briefly, the essential steps are these:

Ore concentrates, shipped to the refineries, are leached with acid or ammonia. After extraction, the pure metal is precipitated by direct hydrogen reduction. The metals, formed as powders, are then ready for pressing, casting or extrusion.

Howe Sound adopted the operation principally for the recovery of pure cobalt from 20% cobalt concentrates, relies upon the conversion of indigenous sulfides into sulfuric acid for the required acid leach. Sherritt Gordon adapted the process primarily for the extraction of pure nickel from low-grade ores, uses an ammonia leach and obtains by-product ammonia sulfate. At certain stages in both operations, copper also comes down as the metal and is recovered as a secondary product. But it has remained for Whitaker to apply the



### Backing for Packingless Pump

A NOVEL IDEA in the design of completely sealed pumps, the Vibropump has been removed from its showcase (*CW*, Feb. 6, p. 64) and put into production by H&H Mfg. Co. (Clifton Heights, Pa.).

Power source of the unit is a conventional motor, but the pump itself deviates from both true can-

ned and standard models, operates on a vibratory principle. A bent or off-center shaft pushes through a flexible diaphragm into a closed sleeve to which impellers are attached. As the motor rotates the shaft within the sleeve, the impellers move like a hand turned at the wrist only, but do not rotate.



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## PRODUCTION . . .

process to the recovery of copper as the principal product.

The Kansas City plant, moreover, makes use of scrap metal in place of raw ore, relies upon a cupric ammonium carbonate leach to bring the copper down as powdered metal. The leach solution is then filtered, reduced in an autoclave at high temperature and pressure. The copper powder is washed and dried. Zinc, when present, is also recovered as the metal; and elements such as tin, manganese, and lead are taken out as oxide slimes.

The plant will eventually turn out 7½ tons/day of powdered copper. That's small as copper refineries go, but that's also the beauty of the thing, say the process advocates, for it makes small-scale recovery units economically feasible. Small scrap-refining plants, they continue, can now be strategically spotted near markets, and hauling costs can be substantially pared.

## EQUIPMENT . . . .

**Stainless Systems:** In order to minimize contamination in the handling of process liquids, Industrial Filtration Co. (Lebanon, Ind.) is now fabricating its Delpark settling and filter systems of stainless steel. The unit, designed to remove particles 0.004 in., or larger, incorporates a settling basin for removal of particles of varying weight prior to filtration and a bar stock screen with 0.004-in. slots for the actual filtration.

**Tube Fittings:** Crawford Fitting Co. (Cleveland) has added a flare connector to its Swagelok line of tube fitting. Ranging in size from ¼ in. to 1 in., the unit is available in brass, aluminum, steel, stainless, and Monel, among other machineable metals. The Swagelok principle of sealing design on its nonthreaded end is featured.

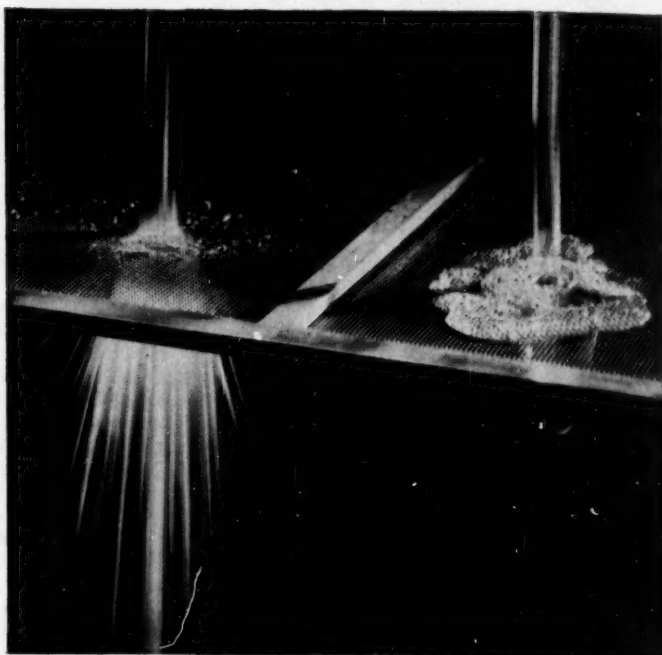
**Fitted Elbows:** Integral, one-piece, forged aluminum elbow fittings that are said to combine low flow resistance and weight with high strength are now available from Resistoflex Corp. (Belleville, N.J.). The fittings were designed specifically for Resistoflex's R-500 fluorocarbon hose.

**In Brief:** Statham Laboratories, Inc. (Los Angeles) has summarized design data and review articles in the physical measurement field, featured them in its 27th issue of Instrument Notes. The 7-page bulletin is now being offered to those interested.

• Submerged Combustion Co. of America, Inc. (Hammond, Ind.) has



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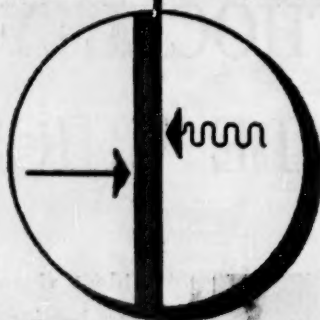
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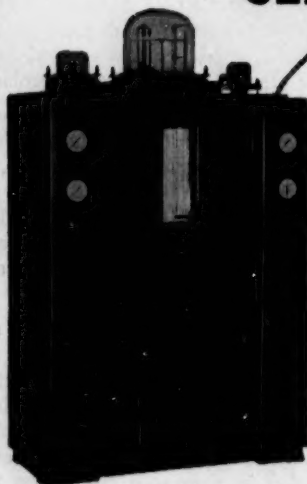
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## PRODUCTION . . . .

published an application manual dealing with the use of Submerged Combustion equipment in various industries. Among the applications covered are the concentration of corrosive solutions, heating of water, and generation of flammable gases by cracking recycled stock.

• After 11 years' testing, the National Bureau of Standards has completed its study of the corrosion of nickel cast irons in different soils. Results, summarized in Technical Report 1869, make it possible for process engineers to evaluate the effects of varying amounts of nickel in castings, to select the most effective nickel-alloy pipes or equipment for subsoil service. The one general effect to emerge at all 16 exposure sites was the greater resistance of the high-alloy cast iron, which was "considerably more resistant to corrosion than either the plain cast iron or the low-alloy cast irons."

**Nuclear Notes:** AEC has released Nuclear Notes For Industry No. 3. Compiled by Technical Information Service (Oak Ridge, Tenn.), the bulletin lists and abstracts selected unclassified AEC reports of industrial interest.

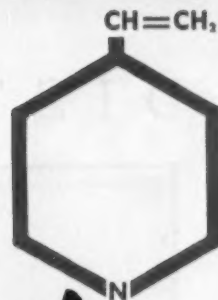
• Engineers Joint Council (New York), a group composed of major American engineering societies, shortly will invite societies of physicists and chemists to join in the organization of a scientific council that will deal primarily with nuclear problems. The aspect of industrial benefit will be stressed both in the selection and in the solution of the problems.

• AEC has chosen Stone & Webster Engineering Corp. (Boston) to design and construct supporting facilities and the housing for the 25-billion-electron-volt proton synchrotron to be built at Upton (N.Y.). The synchrotron itself will be designed and built by members of Brookhaven National Laboratory's accelerator development department.

• At the request of the AEC Div. of Biology and Medicine, the National Bureau of Standards has developed a remote-control system that automatically measures radiation intensities and other variables in the vicinity of an atomic explosion and transmits the data by radio to a centrally located headquarters. The entire system is battery-powered with the exception of the control station and will, says NBS, operate unattended for lengthy periods. Although developed specifically for monitoring gamma radiation and weather conditions, it can be used with a wide variety of detectors to report many other types of information.

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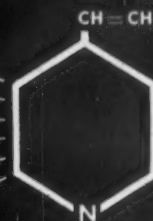
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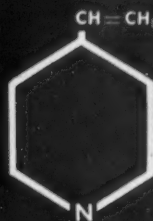
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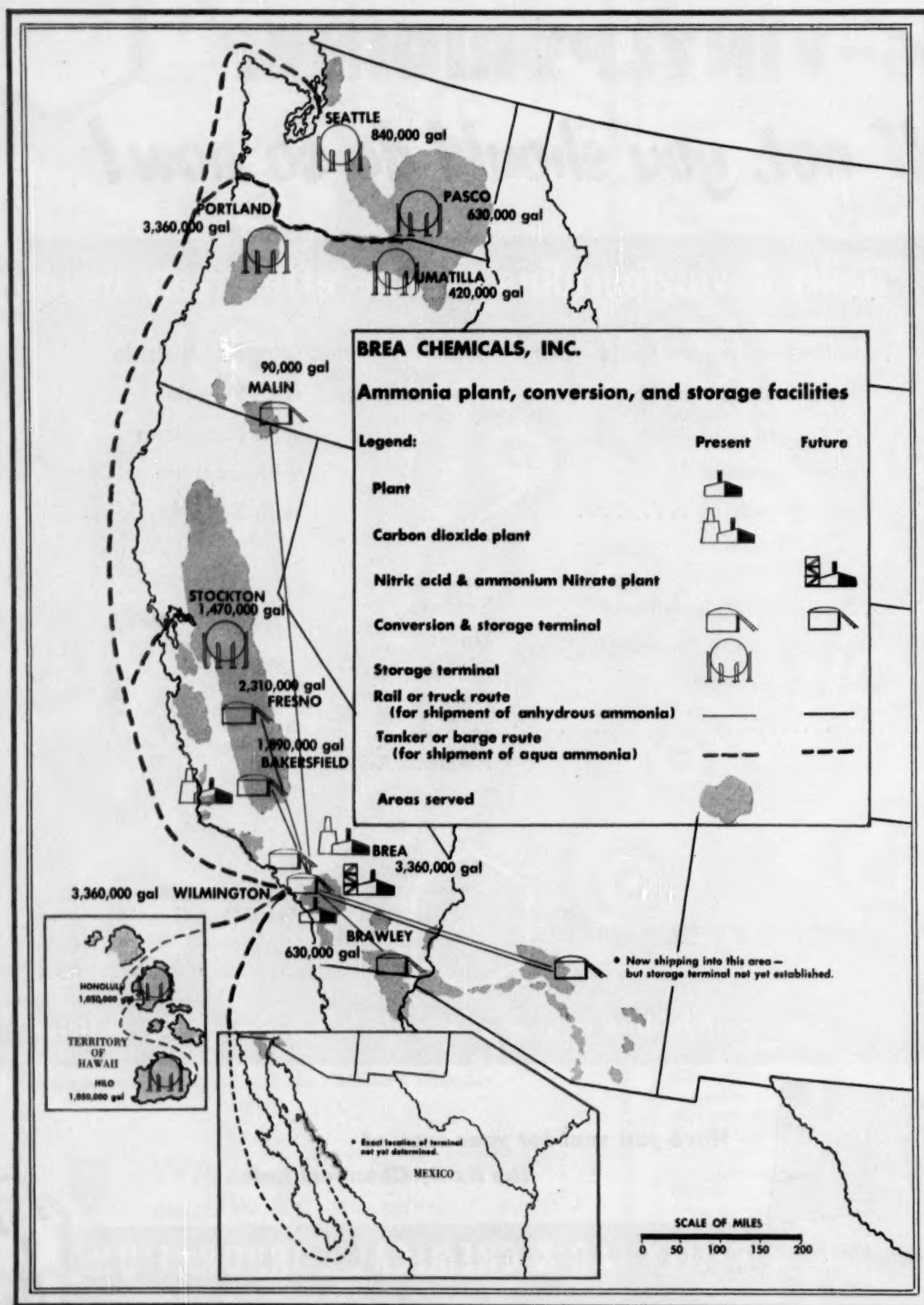
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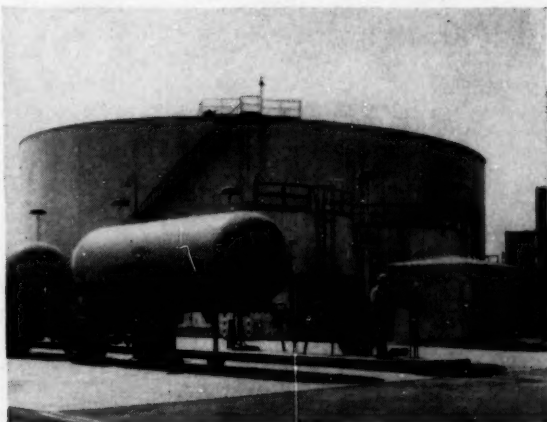
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# DISTRIBUTION . . . . .





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## Emphasis on Aqua

Extending its drive for the Western fertilizer market, last week Brea Chemicals (CW, July 24, p. 14) took another big step in its development and distribution of plant nutrients in solution form.

According to President Homer Reed, Brea has just broken ground for an ammonium phosphate plant at Brea, Calif., slated to go onstream in late September. And in addition, the company is planning two similar plants at Brawley and Fresno, Calif., early next year.

The newest operations will blend phosphoric acid, supplied by Monsanto, with Brea aqua ammonia. Re-

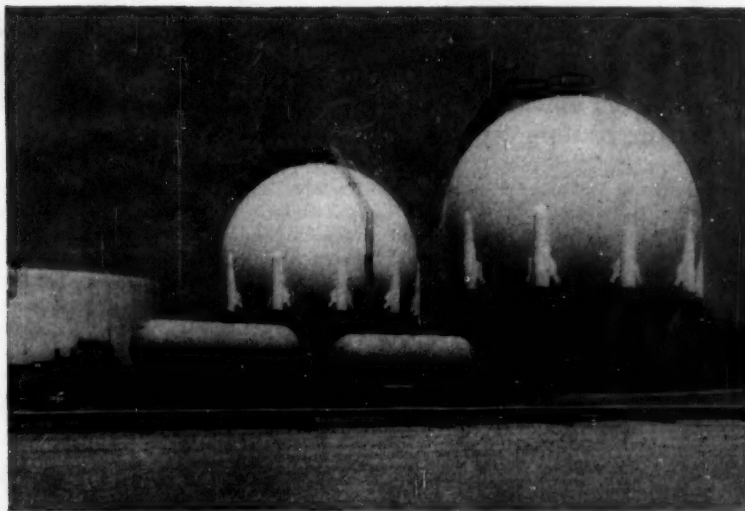
sulting material, containing 8% nitrogen and 24% phosphate, will be distributed as a solution through Brea's new aqua ammonia dealer network.

**Ammonia Base:** With its four-month-old anhydrous ammonia plant now shooting for a 300-tons/day output, Brea's bid as this country's first major marketer of aqua ammonia is rapidly shaping up.

Much in the same manner as Shell (CW, July 24, p. 48), Brea early decided to handle its own distribution to key agricultural points, maintain control of its products and their use close to the actual point of applica-



REED: Breaking new ground for more solutions of Western growing problems.



FIRST STOP: Storage tanks in plant yard mark beginning of first major ammonia-via-aqua route. Plant feeds from parent (Union Oil) company's nearby gas wells.

tion. (By contrast, most Midwestern and Eastern producers, selling their output outright to jobbers and distributors, lose control of their material early in the game.)

As of today, Brea's distribution blueprint includes 13 key points in Western U.S., Hawaii and Mexico (see map). Seven of these are principally storage and distribution terminals; the remaining six are equipped to convert anhydrous ammonia into the aqua form, as well as to store it.

In action, Brea's ammonia moves this way:

- Anhydrous ammonia is produced at Brea, then shipped by rail or truck to conversion stations at Fresno, Bakersfield and Brawley, Calif., and Malin, Ore., to be diluted with water and blended for local use.

- Anhydrous material is also trans-

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- house as necessary and ship at your
- instructions.
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- insecticide—a product that has been
- field-proved for effectiveness against
- such damaging soil pests as *root-*
- *worms, wireworms, white grubs,*
- *chinch bugs, green June beetle larvae,*
- *European chafer grubs, sugar beet*
- *maggots, Japanese beetle larvae . . .*
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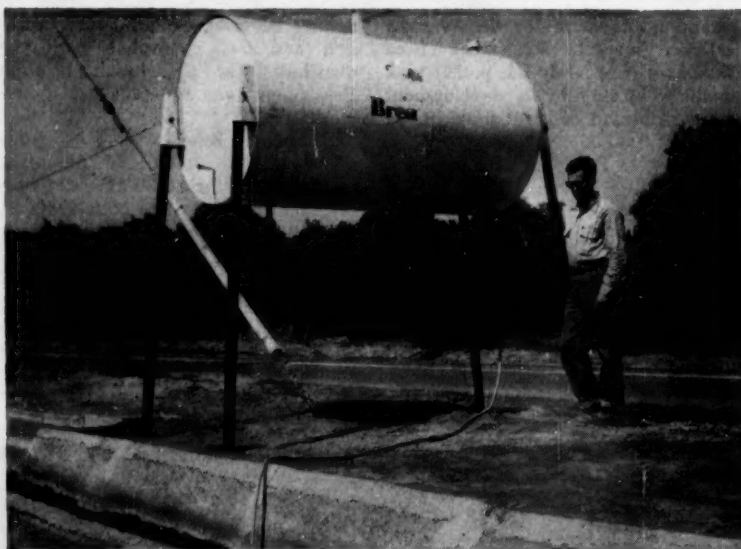
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HAWAIIAN CANE FIELD: Here's lush territory for aqua ammonia, but . . .



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ported to the Wilmington conversion and storage terminal, thence water-shipped to distribution terminals at Honolulu and Hilo in the Hawaiian Islands; Stockton, Calif.; Portland and Umatilla, Ore.; and Edmonds and Pasco, Wash. Delivery to the Washington terminals is made by a combination of tankships, river barges.

- Blended aqua ammonia is truck-tanked (by Brea) from these terminals to dealers' field tanks or direct to growers at any location within the Brea marketing territory.

- Total storage capacity of the present 13 stations exceeds 20 million gal. of aqua ammonia, or approx-

imately 16,000 tons of nitrogen.

**Two-form Race:** Brea's entry in the race for the Western agricultural market will doubtless be watched, not only by well-entrenched Shell, but by east-of-the-Rockies makers and distributors as well. Reason: with Shell stepping up its promotion of ammonia in the anhydrous form and Brea bidding with the 24% aqua ammonia, the stage is set for the first large-scale test of the marketability and consumer acceptance of the two forms. A good showing by Brea might well lead to aqua distribution in the East and Midwest, currently served almost 100% by the anhydrous form.





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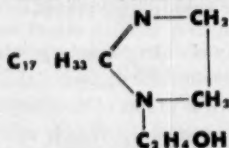
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## DISTRIBUTION . . . . .



**SPEEDY SERVICE:** Rutley execs inspect overnight chemical shipment from the West as . . .

## 'Piggybacks' Roll the Rails

Within 40 hours after highballing out of Chicago, the first "piggyback" shipment of chemicals arrived in New York last fortnight. By employing this newly inaugurated service, Rutley Industries whittled two days from its normal transport time. And, assert company spokesmen, the firm will follow its initial 40,000-lb. shipment of cleaning compounds with a million more in the next several months.

Until they're faced with the need of rapid delivery, however, most chemical traffic managers are tending toward a wait-till-the-kinks-are-worked-out attitude.

True, say they, trailer transport via rail offers such solid advantages as:

- Express delivery. Hauling trailers on flat cars between New York and Chicago lops 30-60% off the normal highway running time.

- Shipping stability. Highway trucking must cope with contingencies of traffic, accidents, and mechanical failure—all introduce uncertainty into schedules. Piggyback shipment, however, is free to a greater extent from these deterrents. Hence, timetables are reliable, costs can be stabilized.

But, the traffic men add, like any new service, operation piggyback will have to prove itself before it can take its place as a service in chemical transport. It must show:

- Schedule maintenance. Trailer-flat car shipments will have to adhere to its timetables. Here piggyback ventures have usually failed.

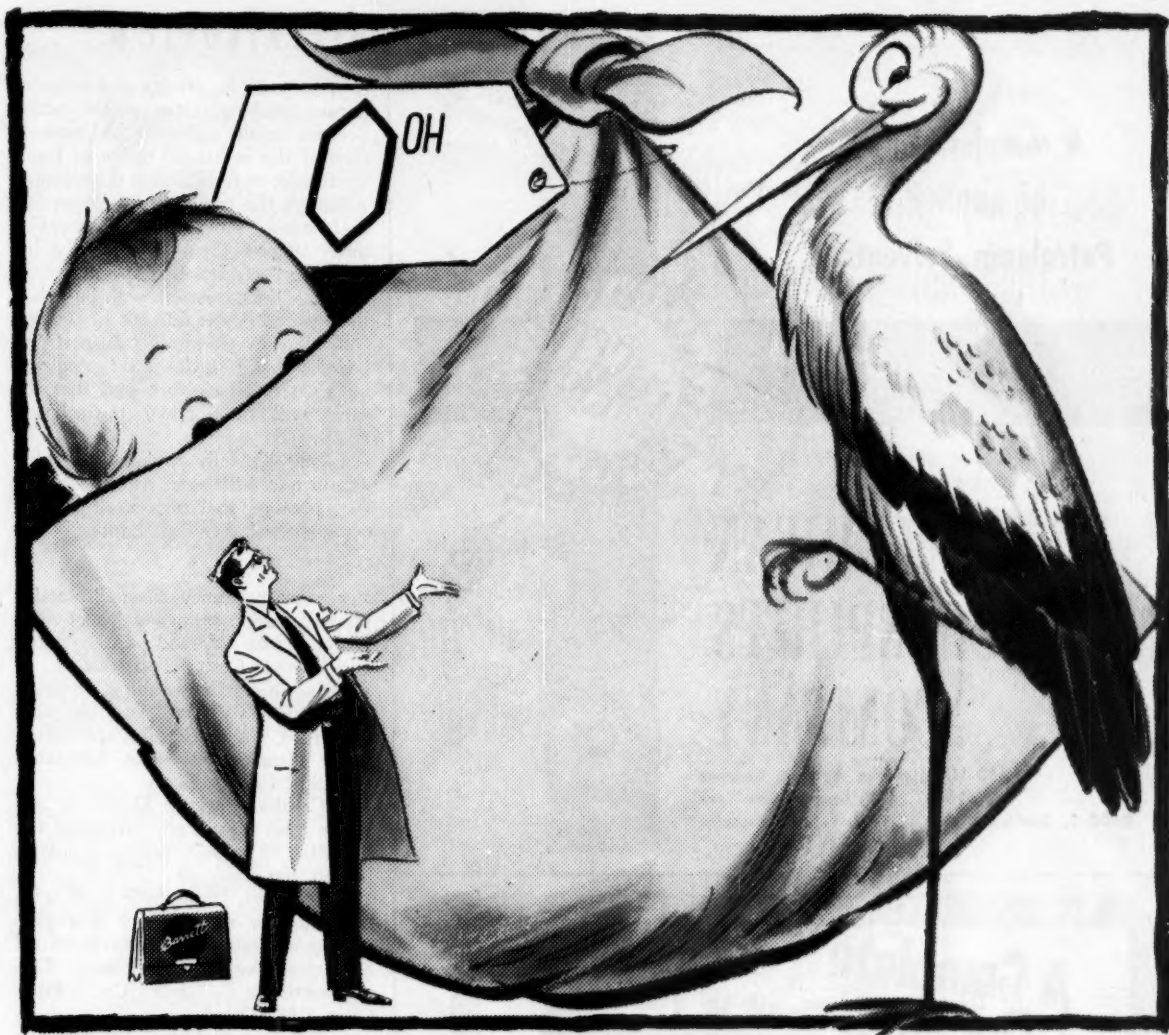
- Increased transfer points. Currently, the new service operates through highway-rail switch points at Chicago, Cleveland, Pittsburgh, New York, Philadelphia and Baltimore. For widespread use, more areas must be included, because piggyback is most practical on long runs.

- Rate savings. The cost of piggyback shipping now approximates regular motor carrier rates. At the very least, these charges would have to remain the same. And some managers indicate that for the service's success, rate-paring below present levels is a necessity. Claimed one chemical transportation director, "If it approximated rail shipment, it couldn't miss."

- Red-tape freedom. Interstate Commerce Commission regulation of rails and trucks is a morass of confusion, alleges the traffic manager of one large chemical firm. Similar "bureaucracy" and red tape applied to trailer-flat car transport, he claimed, would strangle it.

- Unrestricted availability. Currently, piggyback trucking is self-operated by the railroads although New York Central is planning to tote common carriers only. All chemical traffic men quizzed by CW strongly indicated that to "go over," the service would have to be open to all carriers—private and common alike.

Operation Piggyback, besides proving itself, faces another stretch of red-blocked track. Currently, motor carriers and rail lines are squabbling



## "Doc Barrett" Delivers a 25-Million Pound Baby

Here's a blessed event of special interest to industrial users of Phenol USP and acetone. "Doc Barrett," always alert to chemical market conditions, adjusts production facilities to the changing pattern of demand. His latest "baby" is a new plant at Frankford, Pennsylvania, which can produce 25 million pounds of Phenol—15 million of acetone—every year. The new cumene-hydroperoxide process used in this plant permits production of Phenol free from the impurities often found in Phenol manufactured with less modern techniques.

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## DISTRIBUTION . . .

over railroad vs. private and common carrier trucking, rates, motor carrier licenses for the railroads, and reservation of the railroads' rights to transfer freight to freight cars if necessary. Although the traffic men take no formal stand, their trade associations have aligned themselves solidly behind the "no-restriction" position.

What the situation will be when the dust settles is difficult to predict. But men in chemical transport are hopeful that piggyback shipping will be open to all carriers, and that the rates will drift down toward rail tariffs.

Likely it's only under these conditions and with more transfer points, they presage, that piggyback can get a big slice of chemical shipping.

For your reference files: Protective phenolic resin coatings—a leaflet illustrating use in pulp and paper processing. Lithcote Corp., New York.

- Succinonitrile—technical brochure containing specifications, physical properties, suggested uses, and listing major chemical reactions. Monsanto Chemical Co., St. Louis.

- Creative Package Design—a brochure describing and illustrating the essentials of package design. Hinde & Dauch, Sandusky, O.

- "Futures Unlimited"—a 26-minute, 16-mm. sound color film portraying various phases of reinforced fiber-glass plastics manufacture. Libby-Owens-Ford Glass Co., Fiber Glass Div., Toledo.

- Octyl and Nonyl Phenols—12-page brochure describing physical characteristics, uses, and chemical reactions. No. SP-98, Rohm & Haas Co., Special Products Dept. Philadelphia.

- Gas price list and catalog—provides technical data and prices on most commercially available gas chemicals. Needle valve illustrations and use recommendations are also included. The Matheson Co., East Rutherford, N. J.

- Westvaco Chem. Div., Food Machinery and Chemical Corp., New York, N.Y., is offering technical brochures on chloral, dichloroacetaldehyde, trichloroethyl phosphite, thiophosphoryl chloride, tetrapotassium pyrophosphate, sodium hexametaphosphate, and diatomaceous earth. A catalog listing Westvaco products is also available.

- "Fumaryl Chloride" and "Dodecenylsuccinic Anhydride"—two brochures providing technical data and possible applications. National Aniline Div., Allied Chemical & Dye Corp., New York.



## *Report on Wyandotte Pluronics\**

### Pluronics improve rinsability in mechanical-dishwashing compounds

Pluronics — Wyandotte's new series of 100%-active nonionic surface-active agents — have found almost immediate acceptance in the mechanical-dishwashing field. The reasons are easy to understand. Formulators have found the Pluronics provide a unique combination of desirable properties:

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This combination of vital properties cannot be duplicated in any other single nonionic surfactant. The over-all balance of the Pluronics makes them the most versatile agents of their type today. They are giving important sales advantages to many formulators of mechanical-dishwashing compounds. Could they do the same for you?

For more information

**We will be happy** to send you a data sheet summarizing the physical and surface-active properties of the Pluronics. If you are able to give details of your expected applications, we will supply the proper samples and pertinent information for your evaluation. Write us today! *Wyandotte Chemicals Corp., Wyandotte, Michigan. Offices in principal cities.*

### Pluronics' dispersing properties helpful in water treatment

The exceptionally effective dispersing power for calcium and magnesium salts, and the low-foaming characteristics of Wyandotte Pluronics have been found beneficial in boiler-water treatment, as well as in some water-conditioning applications.

Other properties of Pluronics that are valuable in the formulation of water-treating compounds are: their compatibility and stability with acid or alkali solutions over a wide temperature range, and their unusually low order of toxicity.

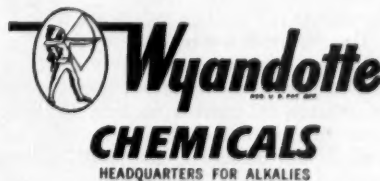
Commercial usage by major producers of boiler-water compounds has proved the Pluronics to be one of the most valuable recent developments in the industry.

### Can YOU profit by the unique properties of the Pluronics?

The Pluronics have found many uses — and accounted for substantial savings — in many fields: viscose rayon and cellophane, metal cleaning and cutting, home-laundry detergents, boiler descalants, air conditioning systems. More interesting, beneficial uses of the Pluronics can safely be expected to emerge from current research in soaps, cosmetics and detergents.

The Pluronics, with their many unique properties and over-all balance, may be just what you are looking for to improve *your* product . . . to give you a distinct market advantage and the jump on competition. Call your local Wyandotte representative, or write and tell us about your needs. Perhaps we have the answer you're looking for.

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# SPECIALTIES . . . . .



DIAL PAINTING: Majority of self-luminous paints are still applied by hand.

## Radium's Got a Rival

Final shipments are going out this month on the Navy's latest order for strontium 90-excited deck and personnel markers. Last of a batch of 9,000 units made by Tracerlab, Inc. (Boston), the markers are replacing the familiar radium-excited\* markers—(already more than 200,000 of the isotope excited devices have been made for the Navy by U.S. Radium).

In addition to being a large volume outlet for an Oak Ridge fission product, the markers have lately proved to be the healthiest consumer of self-luminous compounds (between 400,000-500,000 grams of the self-glowing material has been required for the markers). However, the markers aren't getting much competition right now from a volume standpoint—self-glowing instruments have been eclipsed in popularity by ultraviolet-excited types, and luminous watches and clocks appear to be momentarily out of style.

Big advantage of the strontium-excited products is their low radiation hazard. The isotope is a pure beta ray emitter (beta rays are negatively charged electrons, thus strontium 90 becomes yttrium 90, which in turn deteriorates to zirconium 90), and as compounded and shielded, harbors

none of the dangers common to markers using radium. Too, strontium markers can be made brighter than those with radium, without reaching a point of phosphor-destructive radiation.

Strontium for self-luminous compounds is still purely a military matter, however. The AEC has strict control

of the isotope, so you won't be getting watches with isotope-excited dials, nor finding theatre aisle markings made with strontium 90 paints. Those applications, as yet, are still in the exclusive bailiwick of radium-excited materials.

There are, though, a few cases of the AEC letting isotopes do a specialties job. Examples: carbon 14 is used in devices with medical applications; there are tritium-excited markers (such as those used by astronomers); and promethium-excited "pull" signs are used at aircraft emergency exits.

**Plastic Shield:** The design of the naval markers illustrates a number of the points to be considered in using radioactive compounds. These units are essentially wafers of self-luminous compound in a clear plastic. The plastic, methyl methacrylate, is about 1/4 in. thick, and absorbs enough radiation to keep any dangerous emission from straying. The luminous wafer is in a metal cup, and the whole device is backed by a metal fixture that further reduces emissions.

The markers, generally giving off about 25-30 microlamberts of light, can be fastened to decks to mark walking areas, used to identify life rafts and ammunition boxes, or to indicate bulkhead doors and the escape hatches of aircraft.

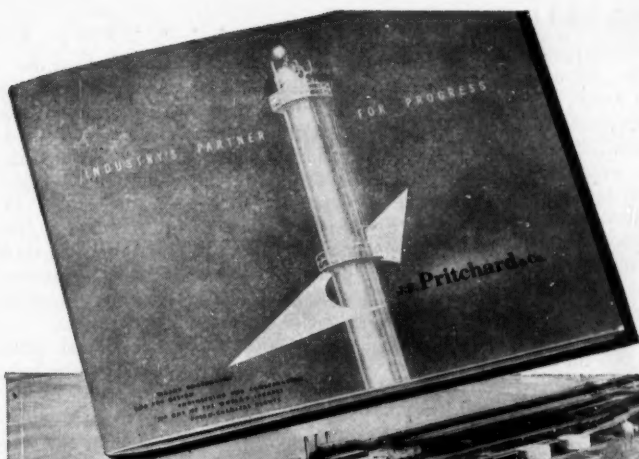
They're fairly expensive—about \$1.50 each. This is more than they would be if made with radium (strontium 90 is 1 1/2-2 times the cost of



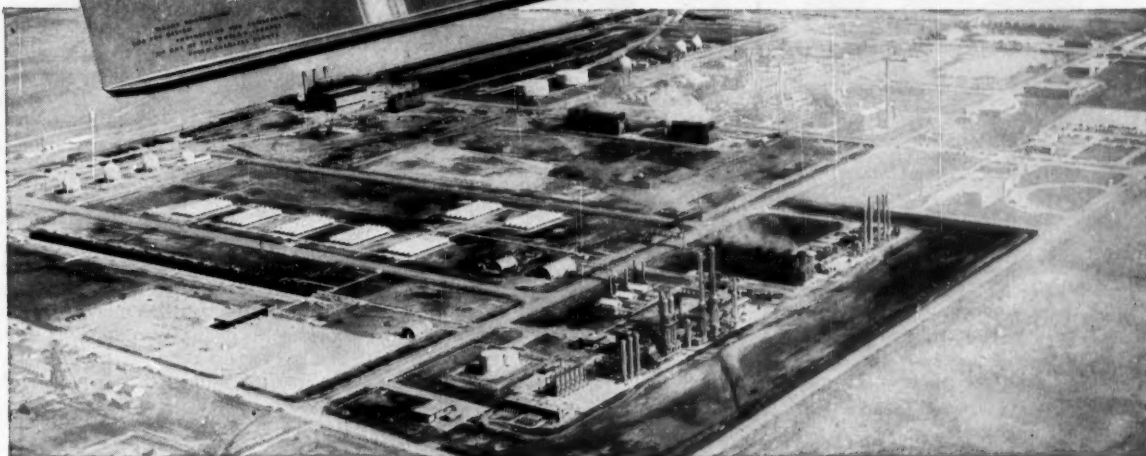
MARKERS: After-dark guides are safer with strontium 90.

\* Markers excited with radium were widely used during the last war, and are available now in military surplus stores. They're virtually harmless, individually, but there is a potential danger if they're stored in quantity.





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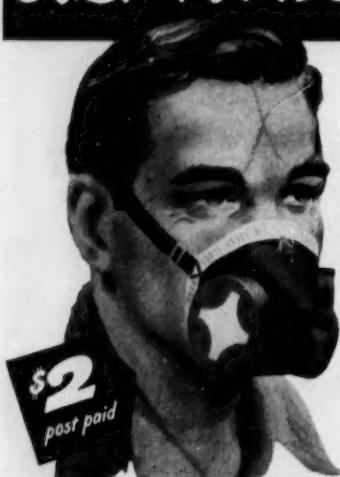
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## SPECIALTIES . . . . .

radium as used here). They could be made thinner, by using a denser plastic such as Kel-r', but the cost would probably be doubled again.

**Thin Coat:** AEC regulation isn't the only reason why strontium 90 isn't going to show up on your wrist watch. Currently devised formulations of exciter and phosphor (the part that actually emits the visible light) work well in the thick marker wafers, but aren't suitable for watch or instrument painting, where the luminescent layer is only 1/1,000 in. thick.

**Dial painting**—still a radium compound exclusive—is largely a hand job application (although it's not now the hazard-fraught occupation it was in the '20s). For a few jobs, like alarm clock dial painting, silk screening can be used.

**Glow Source:** Whether the exciting agent be radium, strontium 90, or any other of the isotopes, what makes the light is the phosphor. It is generally a metallic sulfide, "activated" by a trace of some metal.

One commonly used "phosphor" is zinc sulfide, activated by about 0.01% silver; it emits a bluish light. Zinc cadmium sulfide, silver activated, gives a yellowish light, copper-activated zinc sulfide, a greenish light; zinc-activated zinc phosphate, a red; manganese-activated zinc silicate, a green, etc.

The phosphors used in paint and markers are akin in quality to those for TV and X-ray screens (CW, Dec. 27, '52). These sell for about \$15/lb.

Not much of the exciter is employed—"a few microcuries per gram upward"—and it is generally used as the carbonate. As it is sent out by the AEC, strontium 90 is a water solution of the chloride, which can be simply converted into the carbonate form (radium, too, is most commonly used as the carbonate).

**Black Light:** Phosphors used on instrument dials that are to be excited with ultraviolet or "black light" are also zinc sulfides, in the same price bracket as other phosphors. They have been used often on aircraft instrument dials, and were popular for a time for use on some automobile instrument dials.

A number of complex organic dyes also have the property of fluorescing under ultraviolet light, and have been incorporated in paints, inks, and plastic. Switzer Brothers (Cleveland) is the most prominent of the firms specializing in these organic compounds. Dyes, however, will break down under continued exposure to ultraviolet light—mineral phosphors, although affected somewhat by u-v light, have a much greater life, won't fade after a few months use; hence their choice for

dials of watches and instruments.

A number of firms have interests in the field of radioactive compounds, and supply the materials for luminous paints. Included are Canadian Radium & Uranium Corp., Radium Chemical Co., Inc., Tracerlab, Inc., and U. S. Radium Corp. For many of these, the paints are only a small portion of their business, which is chiefly concerned with medical and laboratory applications of the radium compounds.

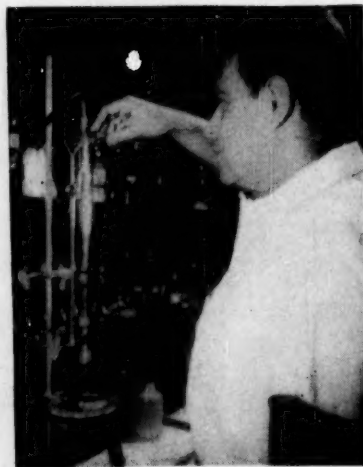
The specialty paints these firms make—the quantities turned out have not been revealed—are pretty expensive. A typical paint for use with ultraviolet light sells for \$25/pint, and self-luminous paints cost anywhere from 25¢ to \$4/gram (sold on a dry basis). One of the most widely used self-luminous paints, meeting Army specifications 38-M, is about \$2.50/gram.

Both the prices and the end uses indicate that these are all turned out in limited amounts. Perhaps if AEC could liberalize its controls of the isotope-excited materials—there might well be considerable civilian use for them. But there's a hazard connected with them that few specialties companies would like to deal with.

## Longer Life

Agriculture Dept. scientists are now in the midst of field tests of a life-lengthener for volatile insecticides. Assuming that current tests pan out, the market for various insecticides could easily be broadened to embrace many uses for which they have been too expensive or too short-lived.

The material that has given best results so far during tests with lindane, heptachlor, chlordane, aldrin, and similar insecticides is a chlorinated

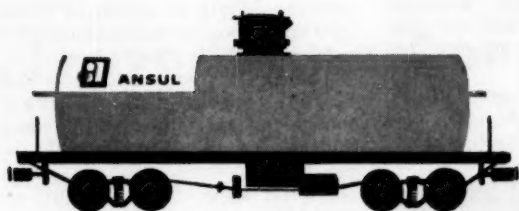


W. J. MEAD

**WHAT'S LEFT?** Irwin Hornstein assays lindane in spray residue.



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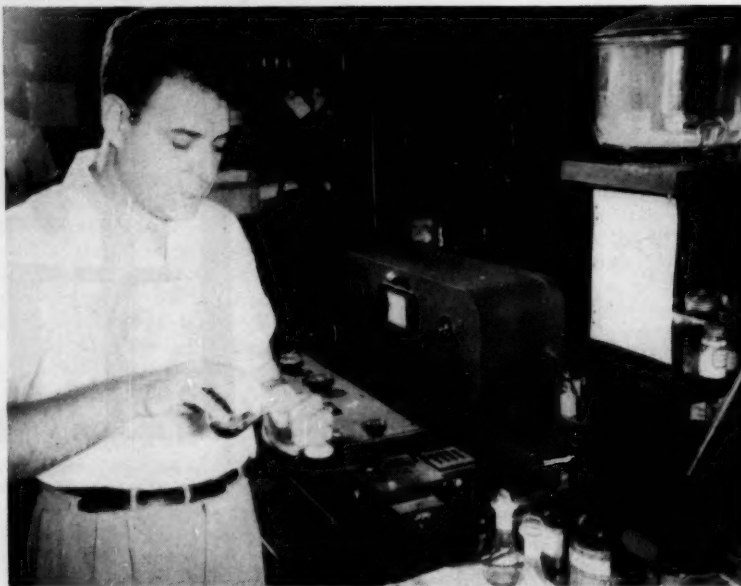
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## SPECIALTIES . . . . .



W. J. MEAD

**LIGHT TEST:** Lindane, Aroclor determination is made with spectrophotometer.

terphenyl (Monsanto's Aroclor 5460).

But USDA researchers W. N. Sullivan and Irwin Hornstein report that while most of their testing so far has been with this product, there's no reason to believe it is unique for this use. Diamond Alkali and Pennsalt, for instance, are among companies that have offered compounds for testing that meet the essential requirements: relatively low molecular weight, compatibility with the chlorinated insecticides, low volatility, and tackiness.

**Ten Times Ten:** A mixture of 25% lindane, 25% Aroclor, and 50% of a solvent such as methyl ethyl ketone

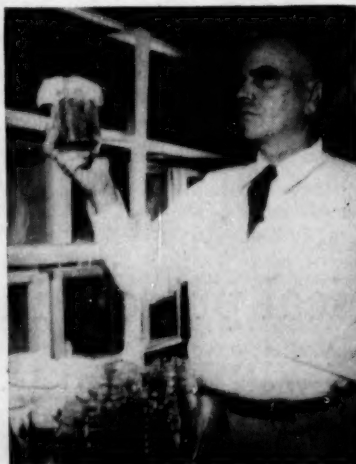
has been the mixture most extensively tested. Where, under a specific set of experimental conditions, lindane can be shown to kill flies for a 10-day period, the mixture multiplied this effectiveness 10 times, to 102 days. (Researchers are quick to point out, however, that this result was obtained under ideal conditions, which would not be found in field use.) Present tests should give an answer as to just how much above normal an insecticide can be boosted in effectiveness.

There are two reasons for the added life of this mixture—first, the ability of the chlorinated terphenyl to reduce lindane's volatility, and second, the use of a low-boiling solvent, which alters the shape of the deposited insecticide.

The specific material that was tested was one in which lindane would dissolve, and which gave a slightly tacky surface after being deposited on the plant. Lindane crystals have a large surface area for their weight, hence the material is relatively volatile. Too, the material's vapor pressure is high enough to make it rather volatile in air.

**Surface Shrinker:** By dissolving lindane in Aroclor, the surface area available for evaporation and the vapor pressure are both considerably decreased. When this mixture is applied to a surface using a low-boiling solvent like MEK, microscopic round "pellets" are formed, and with the slightly tacky surface, the pellets adhere to the plant.

Normally, when lindane is applied



W. J. MEAD

**QUARTERLY EXAM:** After three months, treated lindane is still deadly.



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## SPECIALTIES . . . . .

in oil solution, it may penetrate through the surface with the oil. When wettable powders of lindane are applied, the residue can be washed off by rain.

Application using MEK bypasses both difficulties.

There are problems in the use of the ketone solvent, however. In the first place, there's a chance that it may soften hoses on spraying rigs. This might be circumvented, however, by using specialty tubings. Too, MEK is flammable, which would curb its use in many locations. Methyl chloroform or a methyl chloroform-methylene chloride mixture could probably be substituted here.

There have been some interesting side trails in the experimenting. Normally, about two grams of lindane sprayed on a cow is considered to be toxic. However, the equivalent of 20 grams in combination with terphenyls has been applied without ill effects. USDA scientists feel that, like use in sprays, recommendations for such application must await further tests.

**Phosphates a Problem:** While chlorinated terphenyls have extended the life of volatile chlorinated insecticides, they at first proved disappointing when tried with phosphorous materials.

The mixtures that were tried with such materials as TEPP, parathion, malathion, and chlorothion didn't show any extended life. A test of a four-to-one ratio of Aroclor with Geigy's Diazinon, however, has proved out well. The researchers, while they haven't yet conducted any tests to confirm their beliefs, have wondered whether the shortness of life of the phosphorous insecticides is caused by ultraviolet-catalyzed decomposition. Perhaps, they think, the terphenyl absorbs the specific wave lengths that would otherwise decompose Diazinon.

With phosphates and with chlorinated insecticides, they still have plenty of testing to do. Their results could have a significant impact on other agricultural chemicals—including herbicides.

**UV Resistant:** An ultraviolet-light-resistant formulation of nylon, Zytel 105 BK-10, has been developed by Du Pont's Polychemicals Dept. The new molding resin is jet black, is suggested for making articles that will receive considerable outdoor exposure.

**Camouflage:** A concealing paint to cover marking errors on containers is Stencil-Kover, a new aerosol product

of Reynolds Ink, Inc. The new product leaves a reusable finish when applied over stenciling, crayon, or printing.

**Second Try:** Second of the new Toni cosmetic products (distinct from its hair preparations) is Deep Magic, a facial cleansing lotion. Earlier this year Toni introduced a lipstick, Viv. Deep Magic will get intensive promotion starting Aug. 15.

**Lecithin and Paints:** An eight-page folder titled "Effect of Lecithin on the Dispersion of Titanium Dioxide in Latex Paints" has been published by the Office of Information Services, New York University (New York). The paper describes the effect of lecithin—a compound derived from soybeans—on dispersion of pigment in white latex finishes and on the pH-value and viscosity of the paint system. Price: 25¢.

**Finish Remover:** A heavy-duty liquid stripping compound to remove epoxy and other chemically resistant finishes is now marketed by Du Bois Co. (Cincinnati). The new product, Strypp-Away, can be used as-is, or diluted with water, and at temperatures up to 220 F.

• Another type of cleaner, said to remove paint, rust, and primer from ferrous metals, is Rustgon, a liquid alkaline material developed by Turco Products, Inc. (Los Angeles). Used hot, Rustgon is claimed to clean metals in a few minutes, with only a water rinse. It's said to be nontoxic.

**Bulletins:** Neirad Industries, Inc. (Darien, Conn.) has published a new information sheet on Neiradex No. 1, an emulsion that's rinsed into Dynel industrial clothing to make it splash-resistant to acids and alkalis.

• Sika Chemical Corp. (Passaic, N.J.) has issued a new booklet on its nonmelttable mastic waterstop, IGAS Joint Sealer.

• Larvacide Products, Inc. (New York) is offering a new, 6-page brochure on fumigation with Larvacide and Aerosol Larvacide.

• A new 20-page flavor catalog is now available from Fritzsche Brothers, Inc. (New York).

**Medicine Chest:** There are a number of new drug products receiving initial distribution now. Among them:

• Eli Lilly has worked out a new form of insulin. Latest product is Lente Iletin (Insulin, Lilly), a long-acting form said to permit single-daily-injection therapy. Lente Iletin is





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a zinc insulin suspension, discovered by K. Hallas-Möller, in Copenhagen, and just recently put into production in this country.

• Schering now has a syrup form of Coricidin, its product for relief of cold symptoms, particularly coughing.

• Lederle is introducing Achromycin Ophthalmic Ointment (tetracycline HCl crystalline) for treatment of ocular infections.

• Lederle also has two new veterinary preparations—Avianized Rabies Vaccine for cattle, and Blue Tongue Vaccine for the immunization of sheep.

• Geigy Pharmaceuticals has Eurax Lotion 10%, a new form of the firm's antipruritic agent, Eurax (crotamiton). It is suggested for relief from itching caused by most skin disorders.

• Bristol Laboratories has Polycycline Suspension '250,' a broad-spectrum antibiotic in stable liquid form for oral use. It's one of the first

"ready-to-use," permanent, stable tetracycline products.

• **Wet Writer:** Emphasizing a point that hasn't been plugged since the introduction of ball-point pens, Organic Products Co. (Irving, Texas) is now selling its No. 400 Wet Surfaces ink, devised to mark surfaces while they are wet. Adhesion is said to be unaffected by water.

• **Tradename Adopted:** American Potash & Chemical Corp. has adopted the tradename, V-Bor, for its refined pentahydrate borax.

• **Metalworking Solvent:** Du Pont plants at Niagara Falls, N.Y., and Wyandotte, Mich., have begun shipping a new grade of "Triclene" D trichlorethylene vapor degreasing solvent to metalworking customers and distributors. The principal change has been the addition of a new stabilizer.

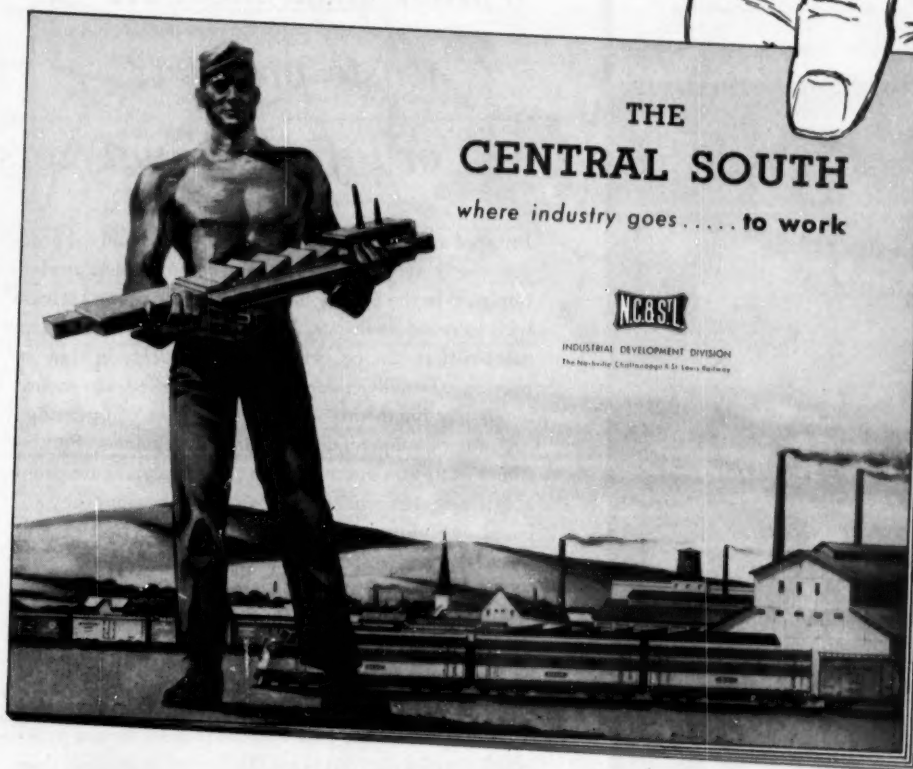


N. Y. DAILY NEWS

## Sun-Loving Dolls

DOLLS that will sunburn may be the next toy rage. At least that's the hope of William Schepp, president of Schepp Laboratories (East Paterson, N.J.), who has developed a doll that will tan when exposed to the sun, and will revert to its orig-

inal color when left indoors several hours. So far, Schepp has perfected a hard-skinned type (methacrylate, with his patented coating underneath), but he expects soon to turn out the soft-skinned variety that seems to be preferred.



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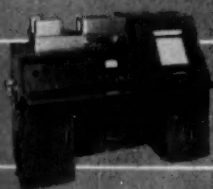


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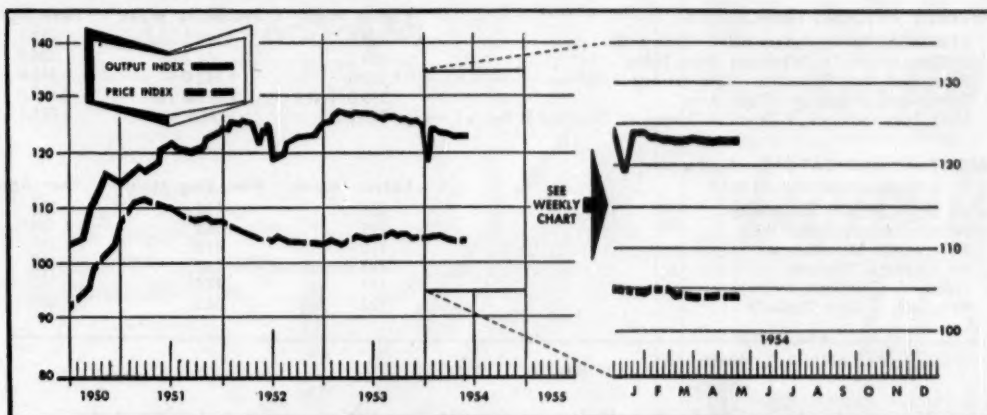
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# MARKETS . . . . .



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries  
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

## MARKET LETTER

The protracted price calm pervading the market of late was abruptly shattered last week. In a move—surprising but not entirely unexpected—prices of ethylene oxide and various derivatives notched up  $1\frac{1}{2}\text{¢}/\text{lb.}$ , which, in some cases, amounted to about 10%.

Carbide and Carbon initiated the action, which, in effect, wipes out the price reductions made last spring (CW Market Letter, April 3). At this writing all but one of the major producers have followed Carbide upstairs, but there's little doubt that all consumers will soon pay the higher rate. Spot purchases go up immediately; contract customers will not dig deeper until Oct. 1.

Some of the new per-pound prices (tanks): ethylene oxide, 15¢; ethylene glycol, 13¢; diethanolamine,  $24\frac{1}{2}\text{¢}$ .

The oxide's increase seems tied to an industrywide condition: the previous  $13\frac{1}{2}\text{¢}/\text{lb.}$  selling price was mighty close to the production cost. So slim has been the margin that many observers have been wondering how the makers ever allowed the slip to the low level. Brisker business in recent weeks, however, may well have triggered the increase.

The boost in diethanolamine spotlights a significant development in a kindred product, morpholine. (Prime outlets for the relatively little discussed chemical include self-polishing waxes, rubber chemicals and rust inhibitors.)

More morpholine is now hitting the growing markets as a result of the onstreaming of Jefferson Chemical's new Port Neches, Tex., installation. The company is understandably reluctant to discuss capacity, but trade speculation pegs output capability in the 2 to 3-million-lbs./year range. That quantity should move Jefferson into the top spot as a morpholine merchant; other producers, notably Carbide and Dow, dip heavily into their production for captive uses.

Jefferson's upcoming 50% expansion in ethanolamines capacity at Port Neches, due later this year (CW Market Letter, May 15), will divert a goodly segment of its di- to the morpholine operation.

## MARKET LETTER

### WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	123.0	123.1	126.1
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.2	104.2	104.7
Bituminous Coal Production (daily average, 1,000 tons)	1,250.0	1,182.0	1,543.0
Steel Ingot Production (1,000 tons)	1,519.0 (est.)	1,527.0 (act.)	2,146.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	327.2	323.5	251.1

### MONTHLY INDICATORS—Production (Index 1947-49=100)

	Latest Month	Preceding Month	Year Ago
All Manufacturing and Mining	126	126	138
Durable Manufactures	135	135	154
Non-durable Manufactures	116	116	121
All Chemical Products	148	147	150
Industrial Chemicals	147	148	161
Petroleum & Coal Products	122	122	131

Price-shading activity in acetone appears to be petering out. Manufacturers' quotes—8¢/lb. (Tanks)—pretty well prevail in a market being described, in some circles, as definitely not soft.

There continues to be an ample supply hanging over the market, however, but optimistic observers consider the condition temporary.

And late last week, north of the Panhandle State (near Pryor, Okla.), John Deere Chemicals threw the switch on a new \$20-million ammonia-urea installation. Capacity is rated at about 180 tons/day of the former, 220 tons/day of the latter.

Actually, the plant locale hasn't been a too robust farm chemical consuming area, but Deere has an "ulterior" motive: bigger crops—and more prosperous farmers—will bring with them a boost in tractor sales.

Hot weather and drought in the cotton-growing states have done a good job of holding down boll weevil infestations. That, of course, is playing hob with DDT demand. Prices of the pesticide, while remaining fairly steady at the makers' level, are being tampered with, at the formulation stage, by competitive pressures.

Another insecticide, however, dieldrin, may soon exploit a new sales opportunity. The U. S. Dept. of Agriculture has granted label acceptance for home use as a spray or dust.

(The chlorinated hydrocarbon's outdoor effectiveness was pointed up in a recent midwest battle with armyworms. Dieldrin was flown by Air National Guard Planes to help stem the destructive insects' march in the Minnesota-North Dakota-Wisconsin area.)

Seasonal dullness has a lot to do with the current slow tempo of plasticizer business. Prices, officially, have been unfluctuating, will probably remain pegged. Reason: pickup in consumer buying is expected later this month and through early next.

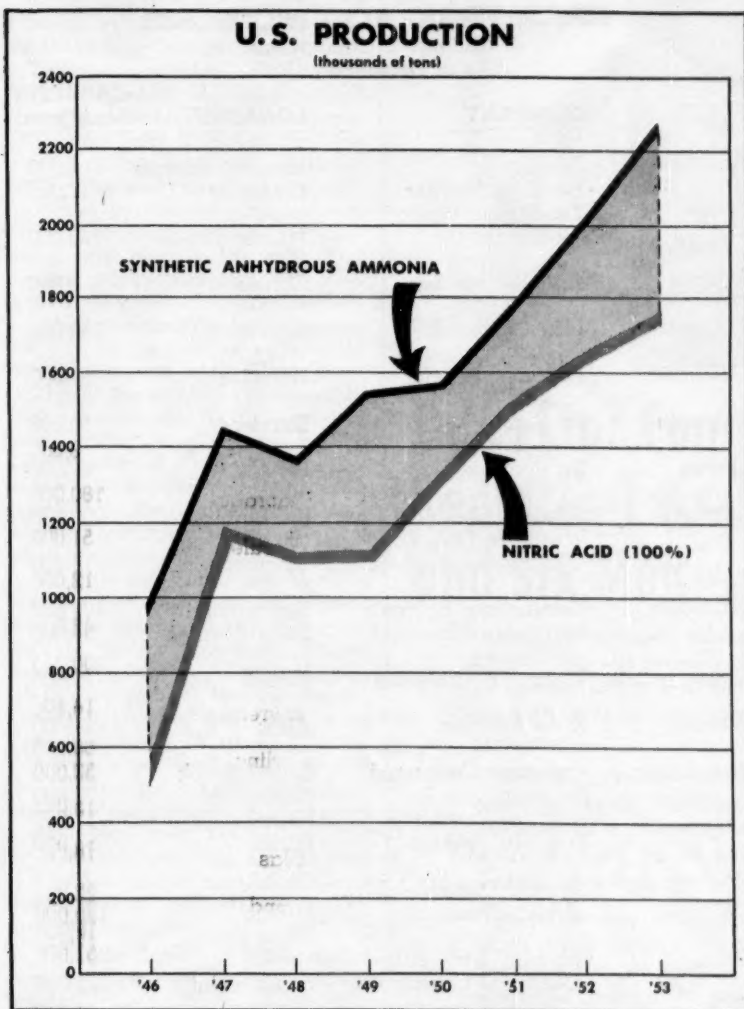
### SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending Aug. 9, 1954

UP

	Change	New Price		Change	New Price
Ethylene oxide, tks., divd., East	\$.015	\$.15	Ethanolamines, tks., divd., East		
Glycols, tks., divd., East			Mono-	.015	.25
Ethylene	.015	.13	Di-	.015	.2475
Diethylene	.015	.1475	Tri-	.015	.215
Triethylene	.015	.18			

All prices per pound unless quantity is stated.





CARBON-COPY GROWTH: Nitric output shadows synthetic ammonia.

## Nitric Etches a Record

Not very often does nitric acid glean the concentrated attention of market observers, but right now the influx of new production facilities in this country is regenerating marked interest in the current and future status of the important fertilizer-explosive-industrial acid—almost as much as that engendered by some developments of the past. Examples:

- The complete switch in positions, over the past 15 years or so, of the two top nitric acid outlets—explosives and fertilizers—and, more recently,
- The industrywide excitement in the last few years about nitric's promising future in the U.S. as a substitute for sulfuric and phosphoric acids in

the field of phosphate rock acidulation.

At the moment nitric acid followers are speculating on capacities of companies whose combined expansions during 1954 alone will likely put total U.S. nitric output capability at close to 2.5-million-tons/year—a near-four-fold increase in less than a decade (see chart).

Already in are these expansions:  
 Spencer Chemical, Vicksburg, Miss., 42,000 tons/year.  
 Phillips Chemical, Etter, Tex., 42,000 tons/year.  
 Lion Oil, Luling, La., 150,000 tons/year.  
 Cooperative Farm Chemical, Law-

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## MARKETS . . . . .

### MAJOR NITRIC ACID PRODUCERS

(Estimated Capacities)  
(As of December, 1953)

STATE	COMPANY	LOCATION	CAPACITY (tons/year)
Alabama	Du Pont	Mineral Springs	6,000
	Hercules Powder Tennessee Valley Authority	Bessemer	17,000
		Muscle Shoals	129,000
Arizona	Apache Powder	Curtiss	8,000
Arkansas	Lion Chemical	Eldorado	180,000
California	Hercules Powder	Hercules	51,000
Colorado	Du Pont	Louviers	12,000
Illinois	Du Pont	Seneca	42,000
Kansas	Spencer Chemical	Pittsburg	200,000
	Westvaco Div., Food Machinery & Chemical	Lawrence	14,400
Louisiana	Commercial Solvents	Sterlington	108,000
	Mathieson Chemical	Lake Charles	50,000
Massachusetts	Monsanto Chemical	Everett	15,000
Missouri	Atlas Powder	Atlas	18,000
New Jersey	American Cyanamid	Bound Brook	22,000
	Du Pont	Gibbstown	120,000
	Hercules Powder	Kenvil	17,000
	Hercules Powder	Parlin	51,000
New York	General Chemical Div., Allied Chemical	Buffalo	25,000
Ohio	Nitrogen Div., Allied Chemical Chemical	South Point	225,000
Pennsylvania	General Chemical Div., Allied Chemical	Newell	40,000
	American Cyanamid	Newcastle	6,000
	Atlas Powder	Reynolds	25,000
Texas	Phillips Chemical	Etter	84,000
Virginia	Nitrogen Div., Allied Chemical	Hopewell	380,000
Washington	General Chemical Div., Allied Chemical	Hanford	10,000
	Du Pont	Du Pont	19,000
Wisconsin	Du Pont	Barksdale	12,800
	Liberty Powder	Baraboo	18,000

rence, Kas., 74,000 tons/year.

Chemstrand, Pensacola, Fla., 42,000 tons/year.

Slated to come in later this year are nitric acid units of Mississippi Chemical, Yazoo City, Miss., and National Distillers, Tuscola, Ill. The

former's expansion, about 42,000 tons, will up Mississippi's total to 103,000 tons/year, start producing sometime in September.

National Distiller's new nitric should begin trickling in November, reach an estimated 40,000 tons/year.

These, of course, are in addition to some 28 other installations throughout the country (see box, p. 74).

Today in the U.S. most of the whacking quantity of nitric produced is captively used at synthetic ammonia plants; relatively little hits the commercial market. And with practically 100% of the acid currently being manufactured by the pressure oxidation of ammonia—as opposed to the once-major, now near-obsolete method of reacting sulfuric acid with sodium nitrate—it becomes clear how the tremendous growth of synthetic ammonia carried with it a concomitant development of the nitric acid industry.

Though the acid has a variety of direct industrial uses (e.g., engraving, steel pickling, etching), by far the largest uses involve converting the material into nitrates and nitro compounds, e.g., for fertilizers, explosives, chemical syntheses, textile processing, plastics, synthetic fibers.

The two major nitric acid consumers have just about swapped spots as top taker. Back in the late '30s some 65% of all nitric produced filtered into the manufacture of explosives. That included black blasting powder, dynamite, "permissible" and other high-explosives.

Last year perhaps less than 10-15% was used in that industry, while more than 70% was consumed in ammonium nitrate. More than 90% of the latter bore a "fertilizer" tag. Of the total 1.6 million tons of ammonium nitrate turned out in 1953, all but 230,000 tons was fertilizer-grade.

Thus the future of nitric is tied inextricably to the farm by two strong cords.

- Continued expansion in ammonium nitrate products, both solids and liquids.

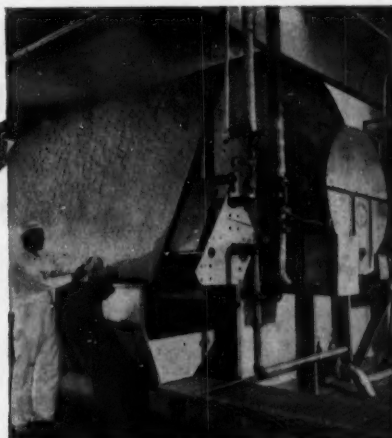
- Possibly of growth in nitric acid processing of phosphate rock.

At the moment more than 0.5 million tons/year of nitrogen is being used by agriculture in ammonia and ammonia solution form. That's roughly nearly 40% of the total nitrogen consumed. And studied estimates point to an increase. Some predict that within the next two years, the amount of agricultural nitrogen obtained directly from these sources will constitute more than half the total. Reasons advanced are basic: it's convenient, economical.

Then, too, higher permissible ammoniation rates (per unit  $P_2O_5$ ) will nudge expansion in total ammoniating solutions.

**Fizzle or Mere Falter?** There's a big question just how much effect digestion of rock will have on nitric con-

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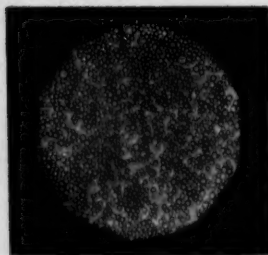
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## MARKETS . . . . .

sumption. When the Tennessee Valley Authority came up with the four processes it had worked out—all based on European methods (CW, Mar. 21, '53, p. 32)—interest ran high.

The strangled sulfur supply condition at the time, of course, did much to boost any sulfuric-saving operation. TVA, too, was vociferous in its claim that—for producers with "captive" ammonia and nitric acid facilities—a plant using the process could turn out the cheapest phosphate fertilizer in the world.

That optimistic view was contested by many industry people who were equally convinced that TVA's book-keeping was off-beam, that adopting any one of the four processes would mean a complete revamping of U.S. fertilizer technology. However, there was no lack of adventurous firms that hastened to take a step toward nitric, away from sulfuric and phosphoric acids, for phosphate production.

Among those companies that broached the government for certificates of necessity, or announced plans to go ahead on their own, were Allied Chemical, Associated Co-op., Northern Chemical Industries, International Minerals, Rauh, Lange Bros., Thurston Chemical, Southeastern Chemicals (now Nitrophosphate, Inc.).

The total "certified" list alone, added up to an impressive capacity, on a fixed nitrogen basis, of about 160,000 tons/year; or, somewhere between 1.15 and 1.25 million tons/year of fertilizer material. Most of the prospective plants are designed to turn out fertilizer with a one-to-one phosphorus-nitrogen ratio.

But the exuberance petered out; mainly because of the reversal in sulfuric acid supply/demand conditions. Some, like International Minerals, dropped their certificates; others have, temporarily at least, shelved plans for nitric phosphate productions. Only two have gone ahead to the nitric acidulation plant-building stage—Allied and Associated Co-op.

The former's plant, at South Point, O., went into operation last fall, and despite some annoying equipment difficulties, will eventually be producing some 200,000 tons/year of nitrophosphates. Associated Co-op., at Sheffield, Ala., with a capacity of about 60,000 tons, is on the verge of producing.

Only three other projects to date are kicking around, these in varying stages of talking, engineering, etc.: Northern Chemical Industries (Searsport, Me.), Lange Bros. (St. Louis), Nitrophosphates (Lamont City, Ill.). Allied, too, will likely turn out a sizable quantity of the material at its

.....  
spanking-new Omaha, Neb, nitrogen complex, and its Hopewell, Va., installations.

Thurston's write-off was for a rather small phosphoric acid-concentrated superphosphate-nitrophosphate setup, but as of now there's no word—nor construction—on the nitrophosphate unit.

There's little doubt, though, that many potential nitric phosphate makers are simply holding off, waiting to evaluate the success of those in operation. For on the surface the processes present a convincing argument for a switch from sulfuric, even though the latter is in ample supply. The basic reason lies principally in nitric's dual function of acidulating the rock, and at the same time supplying nitrogen as plant food in the end product.

Thus, using nitric eliminates or reduces the sulfuric acid requirement, also makes possible the direct use of anhydrous ammonia in the ammoniation processes. End result: more highly concentrated product. In turn, that adds up to economy in transportation—less inert materials are transported.

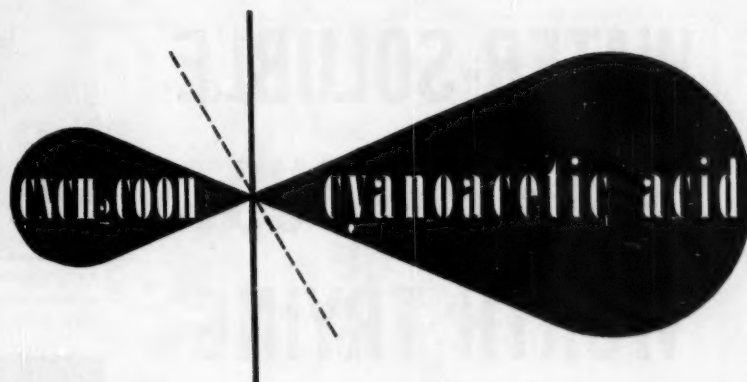
**Eyes on Wisconsin:** Generating most excitement in concentrated nitric acid production is—and has been—a relatively new thermal process developed by the Wisconsin Alumni Research Foundation. Food Machinery & Chemical early took a hand in the development, built a tryout plant at Lawrence, Kas., for the U.S. Army Ordnance Dept.

Briefly, the Wisconsin process involves the production of nitric acid independent of ammonia or sodium nitrate—a method that understandably has the eye of the entire fertilizer industry focused on the Sunflower operation. For the Wisconsin process, if economically successful, would make it possible for most nitric acid consumers to make their own. As one ammonia-nitric producer glumly puts it: "We'd be in a spot."

Operationwise, the method is successful. Already the Lawrence installation is meeting its nitric acid production goal, turning out some 40 tons/day. But the ammonia circumventers aren't showing much elation yet: there's a maintenance cost problem still to be licked.

**Nitric Outlook:** No matter how nitric acid is produced, though, expanding outlets in agriculture, as well as in other sections of the chemical process industries will continue to spark an upward climb in output. And even in the event of another major world war chances are there would be enough nitric to satisfy the exigencies of a war economy.

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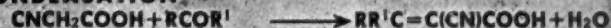
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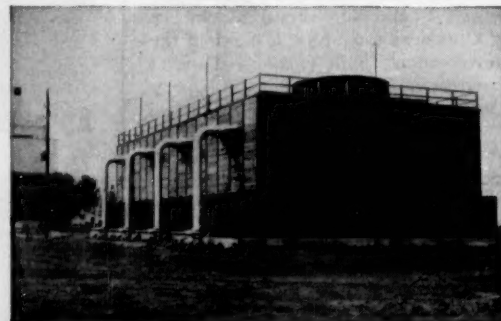
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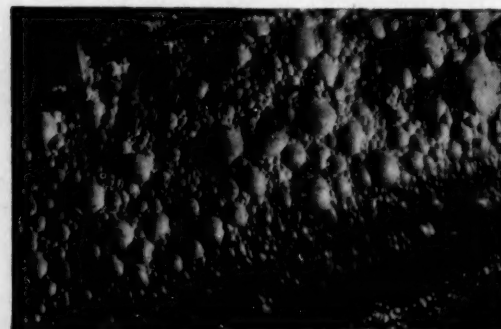
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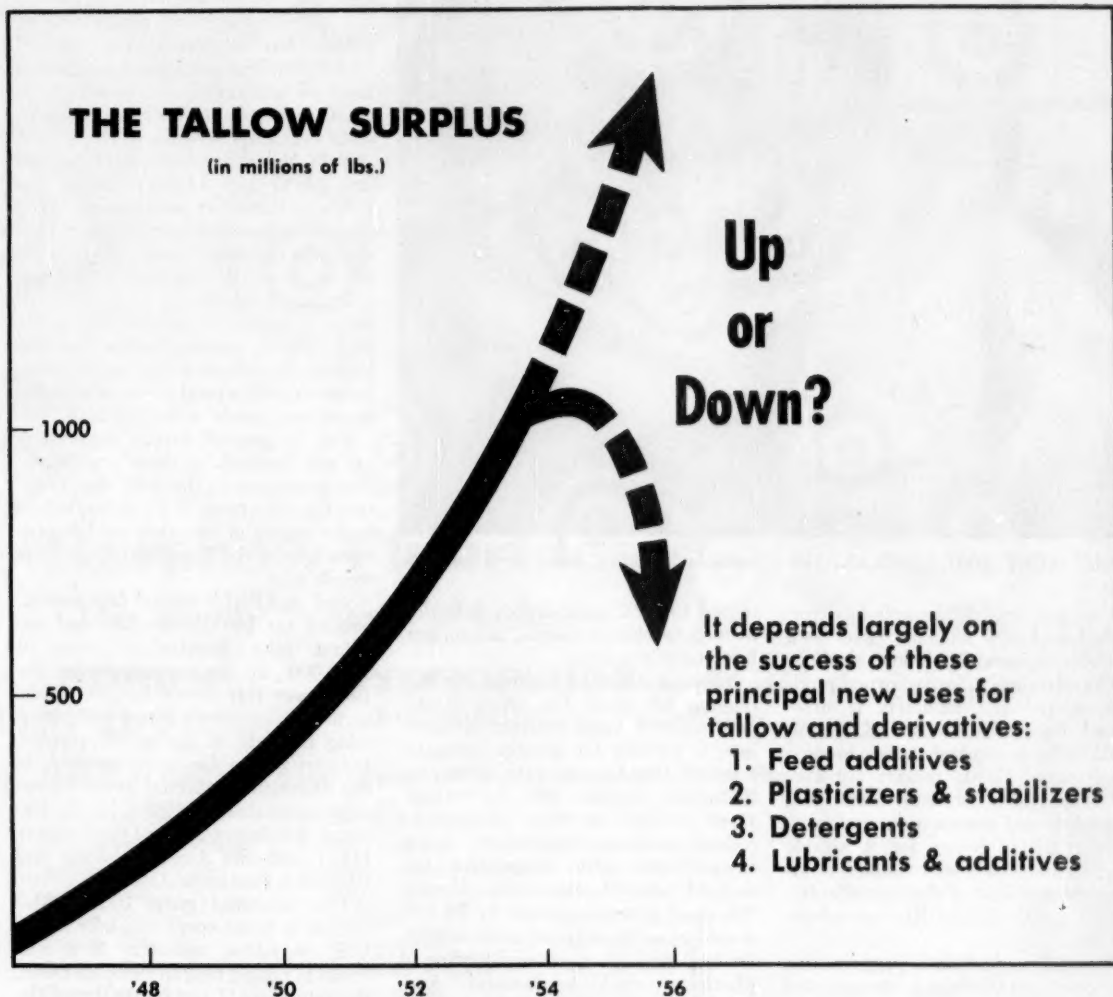
**WATER TREATMENT**—Several amine derivatives are useful in control of bacteria and fungi in cooling towers and in secondary recovery operations.



**FLOTATION AGENT**—Rosin Amine D Acetate has been successfully employed in the flotation treatment of certain ores and minerals.

HA54-3





## Working Off the Fat

Despite a growing welter of animal fat utilization research, the tallow surplus continues on the upgrade. But there was hope this week that the combined weight of studies in four areas would halt its prolonged climb.

New applications arising from this work stand behind this new optimism.

In the van of promising new uses is the incorporation of surplus fat into livestock rations. Pioneered by such deeply interested organizations as Swift & Co., American Meat Institute, Armour & Co., and Tallow Research Inc. (conducting studies at Stanford Research Institute), this procedure is based on data showing that tallow increases the caloric value of animal

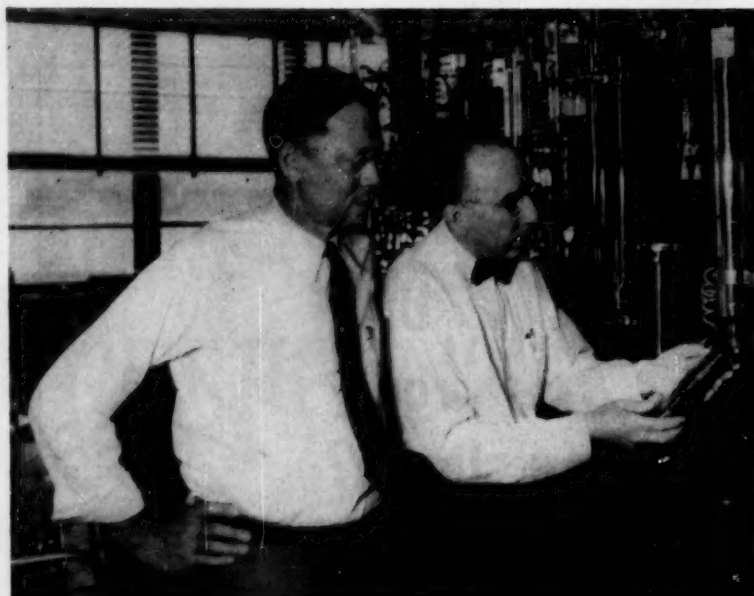
feeds, decreases dusting loss, adds to palatability, stabilizes vitamin A content of the feed, and simplifies the pelleting process.

Already, appreciable quantities of tallow are being sold as an animal feed (16 million lbs. in the first quarter of 1954) but there are high hopes that additional research can extend this use by millions of pounds annually.

Of the outright chemical uses for inedible fats, synthetic detergent manufacture looms largest, is already a commercial reality in Antara's Igepon TE-42 (*CW*, Jan. 9, p. 70). Now, Archer Daniels Midland (Cleveland) is launching a new plant in

Ashtabula, O., to make tallow alcohol sulfate, lending impetus to the detergents-from-tallow trend in which Procter & Gamble has been active for some time.

To speed industrial acceptance of tallow derivatives in surface-active agents, the Agriculture Dept.'s Eastern Regional Research Laboratory (Philadelphia) is seeking better methods to exploit tallow's potential as a source of detergent materials. Alcohol sulfate, for example, is second only to dodecylbenzene sodium sulfonate as a leading base material for detergents. But tallow is just starting to make serious inroads on coconut oil as a prime source for these alcohols. In



ERRL'S AULT AND SCANLAN: For a mounting problem, some level answers.

at least one popular household detergent, lauryl-type alcohols have been partially replaced by tallow alcohols.

The advent of tallow-spawned products as polymer modifiers is milestone by Agriculture's U.S. patent 2,562,965 on vinyl stearate-vinyl copolymers. Plastic makers are eyeing such resins for uses demanding migration- and evaporationproof plasticity. ERRL's hopes for a sizable vinyl stearate monomer market stems from the low cost of the ingredients—stearic acid, 12-15¢/lb.; acetylene, 12¢/lb.

On a lab scale, ERRL prepares this monomer by vinylating stearic acid with acetylene in the presence of a zinc stearate catalyst at 165 C, and 200 psig. Important: the stearic acid must be low (less than 1%) in unsaturates. Suspension polymerization as carried out by ERRL is no problem, results in a 90% yield, involves a mixture of monomers and benzoyl peroxide. Reaction temperature is 50 C; time, 48 hours. Excess vinyl chloride is allowed to evaporate, and unreacted vinyl stearate is removed with boiling methanol.

Emulsion polymerization requires a slight change in formulation, gives higher yields (95-97%), cuts reaction time to 24 hours. Resulting copolymers are insoluble in alcohols and in straight-chain hydrocarbons. Copolymers containing 10% vinyl stearate are soluble in tetrahydrofuran, slightly soluble in methyl ethyl ketone, methyl isobutyl ketone, and ethylene chloride.

When the vinyl stearate content is

upped to 30%, solubility is extended to include chlorobenzene, chloroform, benzene and xylene.

**Looking Ahead:** One firm, Air Reduction Chemical Co. (New York), now offering vinyl stearate in drum lots, is looking for greatly increased sales of this monomer in 1956. Air Reduction suggests 20% (by weight) vinyl stearate in vinyl chloride to reduce milling temperature, foster compatibility with inexpensive fat-derived external plasticizers. Upping the vinyl stearate content to 30-45% is said to produce copolymers suitable for food packaging, where bleeding of plasticizer would be harmful. And, vinyl stearate (10 to 40%) reduces sensitivity of vinyl acetate to moisture, improves the latter for adhesives, paints, and coatings.

Similarly, ERRL is working on dibasic acids (e.g., azelaic, sebacic) derived from tallow, which, if made into suitable copolymerizable compounds, could turn out to be good low-temperature plasticizers for the vinyls.

Still another ERRL idea is the incorporation of vinyl epoxystearate into vinyl polymers to provide built-in stabilization against decomposition by heat and light. At present, it is experimenting with a process to make vinyl epoxystearate from vinyl oleate using peracetic acid as an epoxidizing agent.

Emery Industries, Inc. (Cincinnati) is probing the preparation of lubricants and additives from tallow. One Emery product, diisooctyl azelate,

made by oxidation of oleic acid from tallow, has been well received as a lubricant for jet aircraft engines. In this area of lubricants and additives, ERRL has a recent U.S. patent (2,671,760)\* concerning the improvement of lubricating oil viscosity with copolymers of vinyl esters of fatty acids and vinyl acetate.

**Split Vote:** As might be expected, not all of the industry thinks the tallow problem can be overcome. One plasticizer manufacturer has given up researching tallow products because of the price fluctuation of the raw material. In addition, it prefers tall oil as a source of certain fatty acids (e.g., oleic), reports further that the high-quality stearic it can get from soy beans simplifies production of metallic soaps, etc., made with that acid.

But, in general, tallow researchers are not daunted by these arguments. One newcomer to the field, Bay Products Co. (Bayonne, N.J.) claims tallow is the source of the oleic acid it converts into its chief product, dihydroxystearic acid.

And at ERRL's animal fats section, headed up by Waldo Ault and assistant John Scanlan, a jump of \$120,000 in the appropriation for 1955 over this year's budget attests to the government's interest in stemming the tide of the tallow surplus. Industry's vote for more research in this direction is reflected in the fellowships maintained at ERRL by the National Renderers Assn. (Washington, D.C.) and the American Soap and Glycerine Producers Assn.

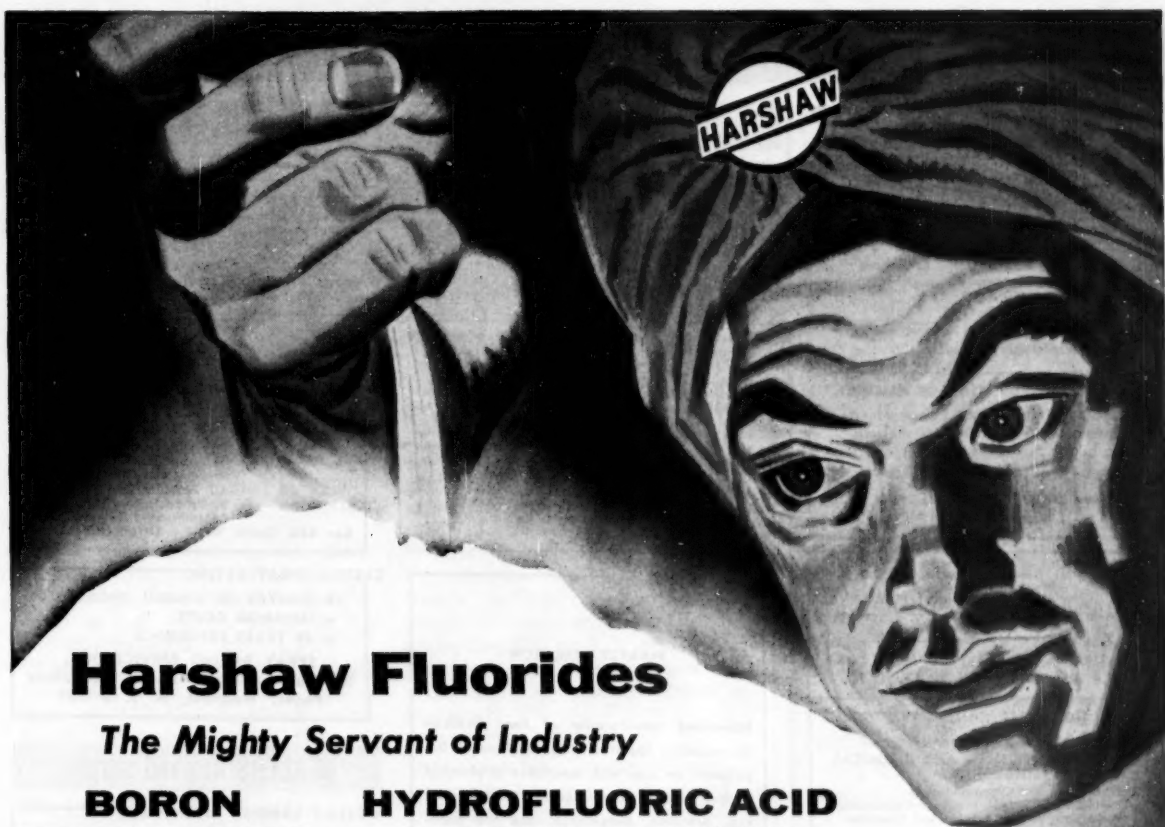
One educated guess is that \$1.5 million is being spent annually in the U.S. on tallow research. If it succeeds in nosing over the surplus curve, the return could not fail to dwarf the investment.

## Into the Arena

Compounds entering the commercial jousts this week included the following:

- Tetrahydrophthalic anhydride, from Allied Chemical & Dye Corp.'s National Aniline Division (New York), holds interest for producers of resins, rubber, chemical intermediates, pesticides, and adhesives. It's a white, crystalline powder soluble in benzene, slightly soluble in ether or petroleum ether. With polyhydric alcohols, it reacts to form resinous polyesters of the alkyd type. Another new National Aniline product, hexahydrophthalic anhydride, is beamed

\* Some other important tallow-utilization patents by ERRL: 2,350,435; 2,443,280; 2,457,611; 2,492,201; 2,624,680; 2,567,930; 2,569,502.



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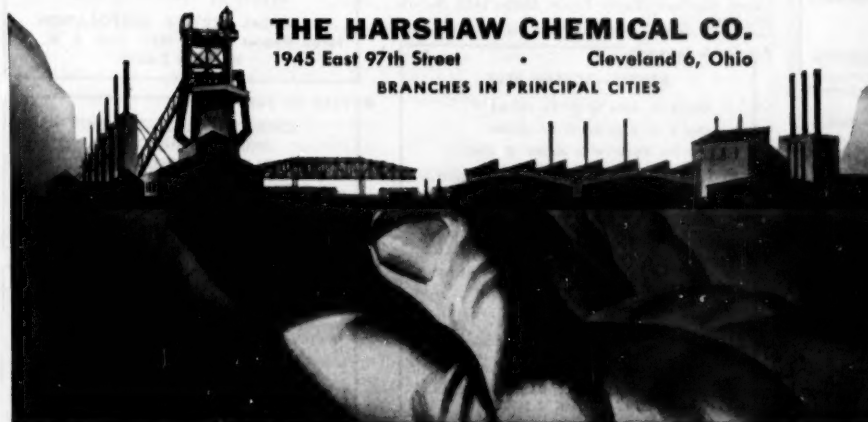
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## RESEARCH . . . . .

at makers of plasticizers, insect repellents, insecticides, and rust inhibitors. Derivatives—diethyl, dipropyl, diisopropyl and dibutyl hexahydrophthalates—are said to show synergistic action with pyrethrum against the body louse.

- Available for the first time as a 98%-pure commercial product is *p*-xylene, from Phillips Chemical Co. (Bartlesville, Okla.). In addition, Phillips is offering a new rubber vulcanization accelerator of the delayed action type. Called Philcure 113 (chemically it's *tert*-butylsulfenyl dimethyldithiocarbamate), it's said to reduce acceleration costs, improve aging characteristics of compounded rubber stocks in both the vulcanized and unvulcanized states.

- Arapahoe Chemicals, Inc. (Boulder, Colo.) has a sextet of new entries. As solutes for liquid scintillation counting, it offers 2-phenyl-5-biphenyloxadiazole and 1,4-bis 2-(5-phenyloxazolyl)-benzene. Under ultraviolet, solutions of these produce light of 3700Å and 4200Å wavelength, respectively. For Grignard reactions, Arapahoe offers cyclohexyl chloride and cyclopentyl chloride. Ethyl vinyl ketone (inhibited with hydroquinone), a highly reactive, readily polymerizable olefinic ketone, is suggested as an intermediate for pharmaceuticals. And for introduction of the succinyl group as in the formation of esters, amides, etc., Arapahoe now can supply semicommercial quantities of succinyl chloride.

- Another newcomer, *p*-isopropylphenylacetic acid, made by Verona Chemical Co. (Newark, N.J.), is slated for use as a basic intermediate in the preparation of pharmaceutical compounds.

**New Construction:** A new research laboratory, to be built near the Buffalo, N.Y., airport, is planned by Spencer Kellogg & Sons, Inc. The company produces and refines vegetable fats and oils.

Two new laboratory buildings are in the works at the Natrium, W. Va., plant where Columbia-Southern Chemical Corp. turns out chlorine, caustic soda, other related products. Construction of a control and research lab (two stories, air-conditioned) is scheduled for completion in June '55. The other building (three stories, 8,400 sq. ft. of floor space) is intended for pilot-plant work, should be ready this December.

- Diagnostic Aid:** A purified enzyme extracted from beef liver is a new diagnostic agent for steroid hormone

investigation. Called Ketodase, it's a form of  $\beta$ -glucuronidase, and is now available commercially from Warner-Chilcott Laboratories (New York). Chemically, it helps free certain hormones from complexes, permits their identification and study. Ketodase is said to be an advance over earlier methods of liberating steroids (which were often destroyed in the process of isolation). Some common steroids that may be determined with the new product include hydroxycorticosteroids, ketosteroids, pregnanediol, and estrogens.

- New Frame:** Fisher Scientific Co. (Pittsburgh) has newly extended its Flexaframe line (dismountable metal setups of various sizes, shapes, angles) to include a floor model. Claims for the addition—named Super Flexaframe: rigidity coupled with low weight. Recommended uses: for pre-pilot-plant lab work involving large glassware, and for control labs (e.g., mass titrations, multiple Soxhlet extractions).

- Data Specialists:** Training of graduate students in data processing, a new field of industrial research, is scheduled to begin at Harvard University next fall. Selected students will take the course, on completion of it will receive the degree of Master of Science in Data Processing, first such degree offered by a U.S. university. Professor Howard Aiken, director of the Harvard computation laboratory, says the new course results from increasing demands for computing machine scientists to formulate the ever-widening range of data processing problems.

- Joint Effort:** Combining an ion-exchange resin and antibacterial agents, Resion-PMS is a new product from National Drug Co. (Philadelphia). It's made by adding polymyxin-B, phthalysulfacetamide, and selected parabens to Resion (itself an ion-exchange resin with therapeutic properties). The new compound is intended for treatment of internal toxic conditions. In clinical trials, it is said to have aided 50 of 54 patients.

- TB Brake:** Over 50 chemical compounds of the ethylmercapto class have recently been found effective in retarding the progress of tuberculosis in mice. Screening of more than 350 such compounds has been reported from the Research Institute of Montreal General Hospital (Montreal), Merck & Co., Inc., (Rahway, N.J.), and Merck's Institute for Therapeutic Research. One of the chemical series,



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## RESEARCH . . . . .

S-ethylcysteine, is said to be at least twice as active against TB as pyrazinamide, and several times more effective than *p*-aminosalicylic acid. Features: these compounds are claimed to be low in toxicity, of possible value in enhancing the antitubercular activity of isoniazid or streptomycin. But clinical trials now in progress have not as yet fixed the value of the new drugs in the treatment of humans.

**Salt-Proof:** New findings by Navy researchers show vinyl-alkyd combinations in paint formulations have salt-spray resistance superior to that of straight alkyls. Several series of alkyls were tried, including those from glycerol, pentaerythritol, glycerol-sorbitol, and mixed polyhydric alcohol.

**Jet Alloys:** New from General Electric's research laboratory (Schenectady, N.Y.) is an alloy said to be capable of withstanding higher temperatures than any wrought alloy now commercially available. It will be produced by GE's Carbology department for possible application in jet aircraft engines. But, according to company spokesmen, it's only one of many novel alloys possible with high-vacuum melting techniques now being researched at GE. Vacuum melting minimizes contamination of the molten metal by the atmosphere (nitrogen, oxygen, water vapor), permits removal of hydrogen commonly trapped in metals. Such contamination is considered to be a leading cause of alloy failure in fabrications subject to stress, temperature extremes.

Reactive elements like titanium, zirconium, and aluminum are expected to find new uses in alloys made by the GE process. Another hoped-for benefit is that metals for alloying can be chosen entirely on the basis of properties needed (availability, weight, corrosion resistance, ductility, etc.).

Although vacuum melting to produce alloys is not in itself new (both German and U.S. scientists tried it prior to World War II), GE claims to have far outstripped earlier efforts, uses pressures around two millionths of an atmosphere. At its research laboratory, more than 1,000 exploratory alloys have been produced in experimental, 6-lb.-capacity furnaces.

**Hot Silicones:** A new project, mutually conducted by Abbott Laboratories (North Chicago, Ill.) and General Electric Co.'s silicone products department, makes available radioactive silicone to researchers in medicine and industry. Before ordering from Abbott, AEC okay is needed.



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